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ABSTRACT

This report was prepared by the Joint Thai-US Task Force on Human Resource Development in Thailand. Volume I of the Report includes: Human Resources Development in Thailand--A Preliminary Assessment; The Educational System and Human Resource Development in Thailand; Manpower Demand; Adjusting Educational Supply to Manpower Demand; Education Planning for Human Resource Development; Government Manpower Planning; Manpower Utilization; and Recommendations for Further Study. Volume II is made up of two parts: Part 1, Working Papers on Manpower; and Part 2, Working Papers on Education. For related documents, see AL 002 472-474. (JD)

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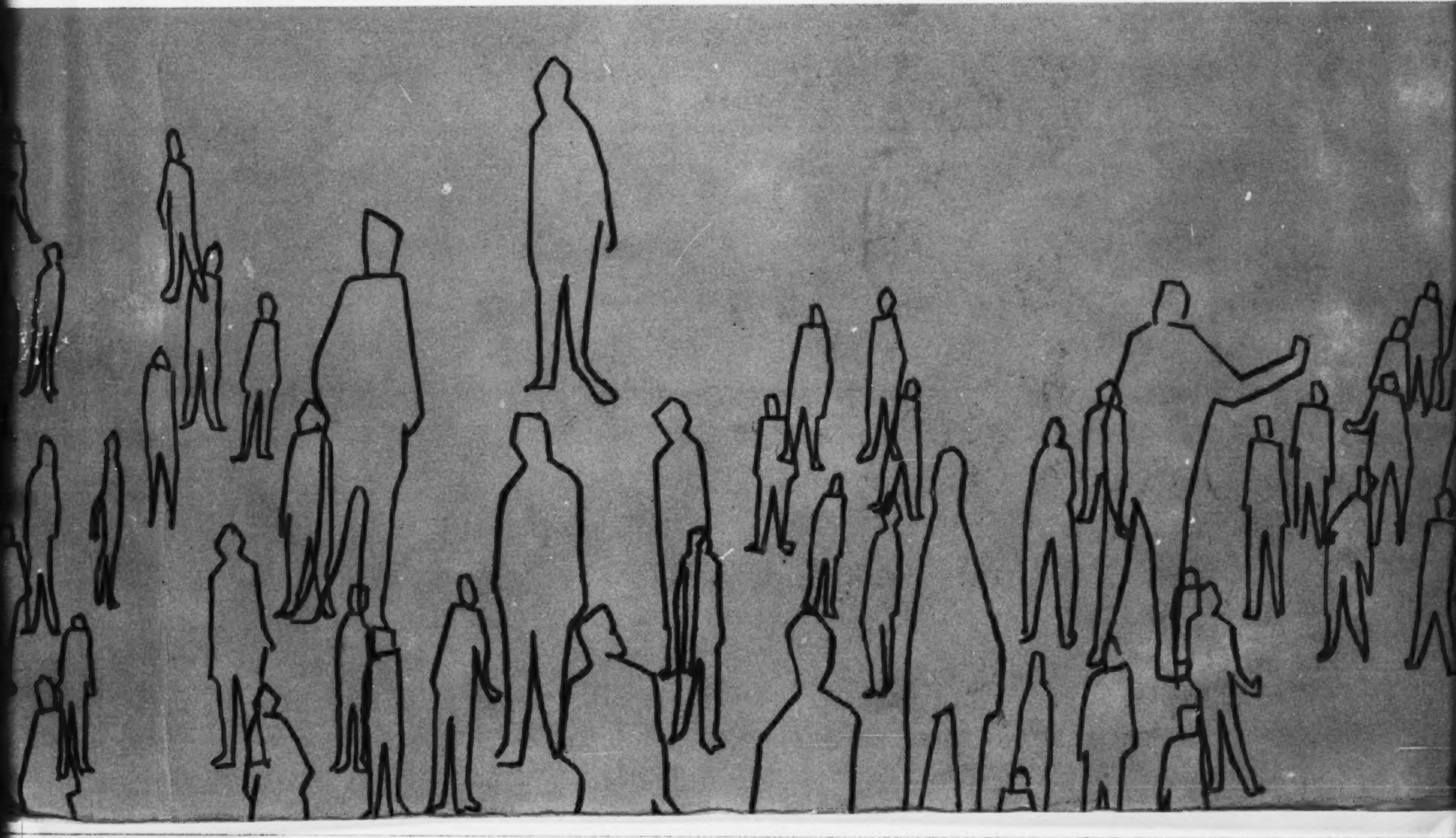
PRELIMINARY ASSESSMENT OF EDUCATION AND HUMAN RESOURCES IN THAILAND

AL 002 475

VOLUME I
REPORT OF THE JOINT TASK FORCE

VOLUME II
WORKING PAPERS

PREPARED FOR THE JOINT THAI-USOM HUMAN RESOURCES STUDY



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PRELIMINARY ASSESSMENT

OF

EDUCATION AND HUMAN RESOURCES

IN THAILAND

AL 002 475

VOLUME I

REPORT OF THE JOINT TASK FORCE

PREPARED FOR THE JOINT THAI-USOM HUMAN RESOURCES STUDY

ADDENDUM

to

the second (and revised) printing of the PRELIMINARY ASSESSMENT OF EDUCATION AND HUMAN RESOURCES IN THAILAND (dated Oct. 3, 1963) and prepared by a Joint Thai/USOM Task Force.

The demand for copies of the Report soon outran the supply. Gratifyingly USOM/Thailand has initiated this second printing a fortuitous circumstance enabling us (the AID/USOM members of the study team) to incorporate revised manpower demand estimates based on more accurate data than was available last fall.

These familiar with the original printing will find that some of the text and all of the manpower demand tables in Working Paper A, Part I of Volume II are variously modified by the application of an accurate "outflow coefficient" developed at our request by the National Statistical Office in consultation with USOM/Thailand census advisors, Mr. Thomas Jabine and Miss Patience Lauriat.

One should particularly note that the principal assumption underlying the original Table B-2 has given way to a more defensible one based on a 2% per year educational attainment upgrading. Revisions in the text (mainly in Chapters III and IV) of Vol. I incorporate the preferred demand estimates of graduates at 1980 developed in this revised model. These preferred estimates are in place of those developed in the original model described in Table B-1.

The above modifications also entailed changes throughout Working Paper G of Part II, Volume II.

Readers who are not familiar with the original version are reminded that neither the correction of errors nor the modification of the "demand estimates" alter the original findings or recommendations. In fact we are inclined to believe that the revised results re-enforce the positions taken by the Joint Task Force Team last fall. In no case has the text material in either Volume I or Volume II been altered except where the revised and utilized demand estimates required such consistency.

These changes and substitutions of revised demand estimates in this second printing is the sole responsibility of the USAID members of the Joint Task Force Team.

October 3, 1963

TO: Mr. Prayad Buranasiri, Secretary-General, National Economic Development Board, and

Mr. John C. Ewer, Director, United States Operations Mission/Thailand

FROM: The Joint Thai-U.S. Task Force on Human Resource Development in Thailand (Preliminary Assessment)

SUBJECT: Final Report and Summary Recommendations

We have the honor of transmitting herewith our report regarding a preliminary assessment of human resources development of Thailand. Our team assembled on August 1, 1963, and is disbanded as of this date.

The attached report is signed by all members of the Task Force, and constitutes a team effort and a team endorsement of the statements contained therein. In order to give the widest latitude to individual opinions, we adopted, early in our deliberations, a procedure whereby any Task Force member could file a dissent to any opinion, recommendation, or conclusion contained in the report. These dissents, if any, will be transmitted subsequently and should be construed as constructive comment that will enhance the value of the report.

In view of the length and detail of our report, we feel compelled to attempt a summarization here of our major findings and recommendations.:

A. Findings

1. Based on admittedly thin factual data, the forecast of manpower requirements for 1966 and 1980 suggests a rather high incidence of secondary school graduates will be required if all manpower targets are to be met. (See Chapter III.)

2. Assuming our manpower requirements forecast is approximately correct, the out turn of needed secondary school graduates cannot be met under the present educational structure. Considerable change seems to be evident if the educational system is to be responsive to the manpower needs of a developing economy. (Chapters II and IV.)

3. While the forecasts indicate no serious strain on the university level of education, there is every indication that science, engineering, and other professional talent needed by Thailand in the coming years will call for a major reorientation in university curricula and environment.

4. Labor marketing services, so necessary for the employment and allocation of manpower in the most efficient manner, should be nationally expanded to cope with present task.

5. The central planning function, as presently set up in NEDB, has not been sufficiently staffed to enable it to formulate an overall economic plan (public and private sectors of the economy).

6. There has not been to date any serious attempt to measure the future manpower requirements of Thailand.

B. Recommendations.

1. In order to continue the forecasting efforts that came into being in the course of making this preliminary assessment, we urge that NEDB set up appropriate machinery with adequate staff to: continuously assess manpower needs; to receive and analyze additional data in order to perfect the methodology and reliability of the manpower forecasts; and to encourage operational manpower planning throughout the public and private sectors of the economy.

2. In view of the massive changes that appear necessary in the secondary school area of the educational system, we urge the immediate mounting of a thorough-going study of secondary education in order to provide detailed guidelines over the next ten crucial years. A three or four member task force of experts (from U.S.A.) working with Ministry of Education officials could do this in three or four months. No long-range commitment of funds should be made until this report can be acted upon.

3. Both the National Education Council and the principal universities should request technical assistance to survey and coordinate curricula, analyze costs, and reorient higher education to meet the high skill needs of the future.

4. Due to the massive role that education plays in providing the nation's needed manpower skills, the Ministry of Education should be encouraged and given every requested assistance in reorganizing its structure. A Ministry Planning Office is of high priority along with urgent reinforcement of teacher training both in numbers and quality. And lastly;

5. The Labor Division of the Department of Public Welfare should be greatly strengthened by budget and personnel support. Manpower utilization requires labor marketing institutions to make appropriate allocation and use of present skills in the economy. Elevation of the Division to a departmental level would greatly assist the task they are presently valiantly trying to perform.

We are happy to report that needed and/or requested cooperation has been forthcoming through appropriate ministries and agencies of the Thai Government as well as from all divisions within and at the top of USOM/Thailand. Without such support, this Task Force Team could not have functioned.

Respectfully submitted,

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PREFACE

Formal recognition by the Thai Government of the need for manpower assessment was contained in an order of the Minister of the Interior dated October 1961, creating the National Manpower Board and a Manpower Executive Committee. The inability of this structure to function as planned is explored in a report entitled "The Development of a Manpower Assessment Programme" prepared by Mr. A. G. Read, (a manpower expert, made available by the International Labor Office), and submitted to the Thai Government early in 1963. In late September of 1962, Mr. Read was requested to advise the Secretary-General of the National Economic Development Board on the basic principles concerning the organization and conduct of a manpower assessment programme suitable to the needs of Thailand.

There seems to be no clear directive transferring the responsibility for developing a manpower assessment program from the Ministry of Interior to the NEDB. Nonetheless, the NEDB early in 1963 did take certain staffing steps, mainly the sending abroad to the United States of three Thai officials for special training in manpower programming. At the same time, in cooperation with the Ministry of Education, steps were taken by NEDB to create a Task Force to carry out a preliminary assessment of manpower planning. A request was made to USOM/Thailand for the procurement of three experts to be a part of the Task Force team. By the time arrangements were concluded and recruitment of the U.S. members could be made, substantial changes occurred in the NEDB by virtue of the transfer of TTEC to the new Ministry of National Development, and the transfer of the Central Statistical Office to the Office of the Prime Minister. Also, at this time, substantial staff transfers took place and the secretary-general's office of NEDB became vacated - all of which considerably slowed down the efforts theretofore spent in NEDB to mount a manpower assessment program. Such was the situation that existed on August 1, 1963, the day the Joint Task Force met to organize its manpower assessment activities. That we got off to a start at all was due to the efforts of Nai Bunchana Attakor, Deputy Secretary-General of NEDB and Deputy Minister of the new Ministry of National Development. It was apparent, however, that unless competent Thai personnel were to be assigned to work with the Joint Task Force Team, no progress could be made. At this juncture, M. L. Dej Snidvong, Chairman of NEDB Executive Committee and Dr. Puey Ungphakorn, Governor of the Bank of Thailand, and a member of the Executive Committee of NEDB, moved to solve the direction and staffing problem within NEDB. Definite progress in our joint efforts began to be fruitful with the release of Nai Prayad Buranasiri from his duties with the Bank of Thailand, his subsequent appointment as permanent Secretary-General of the NEDB, and assumption of the chairmanship of the Joint Task Force Co-Director's Committee.

The report which follows is the work of many persons, a number of whom have given all or nearly all of their time to the Task Force's work or deliberations. On the USOM side, we should especially wish to acknowledge the constant attention and support of Mr. John C. Ewer and Mr. Tracy S. Park, Director and Deputy Director; Dr. Frederic T. Shipp, Chief Education Advisor and Dr. Gordon Pierson, Program Economist.

On the Thai side the list is also long and impressive: His Excellency M.L. Pin Malakul, Minister of Education; His Excellency Bunchana Attakor, Deputy Minister, Ministry of National Development and Deputy Secretary-General ~~of the NEDB~~; Dr. Puey Ungphakorn, Governor of the Bank of Thailand, Advisor to the Ministry of Finance, and a member of the Executive Committee of NEDB; Nai Abhai Chandavimol, Under-Secretary of State for Education; and Nai Prayad Burnasiri, Secretary-General of NEDB. Special mention should be made in regard to the unstinting labors on behalf of the Task Force working group on the part of Nai Charoon Vongsayanaha, Director-General, Education Techniques, MOE; Dr. Kaw Sawasdi Panish, Acting Chief, Division of Teacher Training, MOE; and Dr. Prom Panitchpakdi of the National Education Council. Additional acknowledgments far too numerous for listing here will be found immediately following Chapter VII. Such placement in no way dimishes our deep consideration for their assistance.

Of course there are always those numerous persons, generally unnamed who give valiant support to any efforts such as ours. To them, wherever situated, our thanks for their splendid help.

During the past two months, many team members of our Task Force maintained close communication with the UNESCO Educational Investment Programming Mission. Their general cooperation as well as specific collaboration in joint preparation of the manpower demand estimates, is gratefully acknowledged.

In the drafting of this report we have drawn heavily on the Working Papers and other original material to be found in the appendices and to which many persons contributed. The listing of their names thereon, however, does not make them parties to any recommendations, opinions, or conclusions of the Task Force - this is the sole responsibility of the Team Members whose names appear below.

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ADDITIONAL ACKNOWLEDGMENTS

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CHAPTER I

HUMAN RESOURCES DEVELOPMENT IN THAILAND

A PRELIMINARY ASSESSMENT

Introduction

The members of the Joint Thais - U.S. Task Force were under instructions (agreed to by the Executive Committee of the National Economic Development Board and USOM/Thailand) to work towards the following objectives:

1. Undertake a preliminary assessment of Thailand's human resources and educational development targets in relation to Thailand's requirements for economic development and its educational goals.

2. Make recommendations as to the appropriate and required machinery in the Thai government for the integration of human resource and educational planning with the planning for over-all economic and social development.

3. Make recommendations, in order of priority areas, of research and data collection, including manpower and training surveys, needed in the formulation of both short and long-range human resource and educational development.

4. Identify major areas where continued need exists for technical assistance in implementing and sustaining long-range planning for human resource and education development.

5. Identify high priority human resource requirements i.e. high-level manpower resources for economic and social development in terms of internal and external procurement.

The above terms of reference are certainly comprehensive--too much so in view of the short period of life we have been given (two months). Other circumstances, as recited in the preface, made it difficult for the team to function properly until nearly three weeks had passed. At this juncture the Joint-Task Force was at full membership and had to review its objectives in order to ascertain what could be accomplished in the remaining time and the priorities that should prevail.

As the principal purpose of our being a Joint Task Force was to activate and make operational machinery of government concerned with manpower planning in terms of educational development all members readily agreed that priority should be given to: (1) implementation of an N.E.D.B. staff unit to work in the development of over-all manpower requirements at two specific target dates, i.e. 1966 (End of current six-year economic development plan) and 1980 (sufficiently long-range to give the widest latitude in educational planning), and (2) assessment of the current educational systems capacity to supply manpower for economic and social development at the suggested target dates.

With these two assessments at hand we could then proceed to the harmonizing or matching of the educational attainment requirements of the labour force at the target dates with the ability of the educational system to supply them. The exercise would develop areas of student supply in surplus, or in shortfall, which would then suggest the possible alternatives in adjusting the educational system to supply the educated manpower at each educational level in the accepted projections of manpower demand at the target dates. In effect these three separate but closely related exercises, as actually performed, gave reality and suggested form to the recommendations we were required to make regarding governmental machinery in manpower and educational planning. As an extra dividend these exercises proved to be an invaluable educational experience for the many staff members of N.E.D.B., the Ministry of Education, and other agencies which were involved in this manpower and education assessment.

Long-range planning is important in demonstrating the direction of development and the adjustments that will be required as the policy makers give shape to the development plans. The lead time thus provided will permit necessary adjustments in educational "pipe line" flow as well as adjustments in the pace and scope of planned economic development. We are quite aware however that manpower planning does not consist solely in the long-range forecasting of demand and supply of human resources required in economic and social development.

No less crucial in manpower planning is the realization that in the short run not much can be done to adjust the educational system. However linkages between schools and employing establishments can be improved to get better placement and use of the existing supplies of graduates. Thus, reliance must be placed on other institutions to assure the efficient utilization of the present stock of manpower.

In any rapidly developing nation effective utilization should have the highest priority both on economic and social grounds. Regardless of educational attainment each individual should have the opportunity to develop according to his or her highest ability. In a market economy this means that the employing institutions (private or state enterprises and governmental ministries and agencies) should be engaged in intensive training activities designed not only to perfect performance on the job but to assist the individual in qualifying for a higher rated job.

Appropriate allocation of manpower in a market economy can only take place if there is adequate manpower marketing machinery in action, minimum barriers to lateral and vertical mobility in the employing sector of the economy, and economic motivation (appropriate wage and salary levels and differential) geared to attract individuals into acquiring the skills in short supply, and an adequate dissemination of job information to the labor force and employers so that the employment market can function as automatically as possible.

All of these institutions can be given better direction and be more effective if they are operating within the context of appropriate policy on employment, education, and training. Such policies need to express employment goals perhaps by sector, targets for reducing unemployment and under employment, and harnessing idle manpower for development. On the education and training side, policy must treat the objectives of education and training, the priorities for allocating scarce resources, and the menas of continuous modernization and upgrading.

To do all this requires specially trained personnel, adequate and timely data, over a broad spectrum of human and economic activity. In effect there must be adequate governmental machinery to carry out the planning activities and to implement the policy decisions that flow from consideration of the total economic and social development plans, including human resource development.

While the Joint Task Force has given attention to the totality of manpower planning, its primary efforts have been directed to implementing the machinery for the development of long-range manpower requirements for economic development and the educational planning required to achieve the stated goals. This emphasis will be apparent as the Task Force findings are developed through a series of chapters that follow. In a separate volume will be found appendixes containing the various tables, charts, schedules and working papers referred to in the text and in support of the many analyses and recommendations that are entailed in our assessment of manpower and education planning.

Structure of the Report

The educational system in any country bears the heaviest burden in the over-all development of human resources, however it is only recently that the importance of education to economic development has been generally recognized. A recent study done by Edward F. Denisen for the Committee of Economic Development (U.S.A.) concluded that between 1929 and 1957 education was the source of 42 per cent of the growth of real national income per person employed in the U.S.A. Nor should anyone assume that human resources for economic development comes about only through formal education. As pointed out above, such development also is a product of training and upgrading in employment, and by self-development in response to incentives and values in the society. Of course in the short run outputs of the formal education are fairly rigidly fixed, though one may do much by channeling students into priority areas of study through a judicious control over scholarships and grants in aid, and the provision or withholding of capacity in specific curricula.

For the Joint Task Force however, the projection of outflows from the formal educational system over the long run has special importance.

In chapter II the role of education in human resources development in Thailand is described in terms of the expressed national goals. Here we will find the facts to chart the projected flows of students in and out of the system at the various educational levels as well as touching on the system, as it extends to Thai students studying abroad. Here too are delineated some of the more obvious constraints that present the system from achieving the highest potential for which it is capable. We then turn to the economic manpower requirements side of this supply and demand coin.

In chapter III (and related appendixes A and B) the estimates of manpower needs at the target dates of 1966 and 1980 are developed in terms of educational levels. Mainly due to data deficiencies three methodological approaches were evolved in order to give the widest range to value judgments that could rationalize the most acceptable projections. Of the three methods the projections based on "economic output" appear to be the most reliable and are given the greatest weight in the analysis that is required in harmonizing demand and supply in chapter IV. The estimates for secondary school graduates, vocational general and academic appear to pose the greatest challange for the educational system. Deficits at this level are a potential bottle-neck in economic development unless employer institutions step up in-service training activities. The requirements for high level educational attainment do not appear to cause undo concern on the quantitative side, although the qualitative aspects of the situation could have serious consequences in a quickened pace of industrialization and particularly in implementing sophisticated development projects.

By comparing the outflow of students at the various educational levels over the period 1963-1980, developed in the previous chapter, with the manpower requirements for the same period as developed here, we will be able to measure the extent of the short falls or surpluses of students at the various levels of educational attainment.

Thus armed we will, in chapter IV, re-examine the educational system for the purpose of planning the changes or adjustments that can or should be made therein if it is to be responsive to the manpower requirements needed for economic and social development. Of course there are physical and financial limits to any planned development program and no one would assume that the response to manpower projections must be absolute for the educational system or any other development institution. Thus we will examine the various constraints implied by an over-all analysis of manpower requirements in relation to all other major aspects of economic and social development. It is here that the major recommendations of the Task Force will appear insofar as we are able to suggest high priority matters in operational activities at the governmental level of development planning.

In chapter V we take up in considerable detail the kind and extent of educational planning that should be instituted if the educational system of the country is to be constantly responsive to the needs for trained manpower in economic development and in satysfying, if not leading, the country's cultural and social growth. Our special concern in this area of planning is obvious, given the lead time required to have the educational system geared to Thailand's needs. Areas of required research and analysis include the economics of education; curriculum programming; evaluation; cost analysis; and the recording of social changes influencing education. Lastly consideration is given to the planning structure itself in order that educational planning will be adequately related to the national economic and manpower planning agency and to the private sector of the economy as well.

It is now appropriate (chapter VI) to give consideration to the appropriate machinery that is required in carrying out a viable national planning operation in human resources development. Our concern here is not so much where or in what Ministry should this or that part of the planning operation be carried out. We are very much concerned however that manpower planning is carried out in a cohesive manner throughout government, with a competent secretariat to command the gathering of appropriate data, to analyse it, and to formulate policies and action programs for the consideration of the appropriate decision making body charged with planning for the whole economy, and to assist planning units in the various Ministries and agencies in relating their action programs to the manpower policy directives that apply in their respective spheres.

We have stated earlier that manpower planning is by no means exclusively related to educational development and we could not fulfill our terms of reference or do justice to the comprehensiveness of manpower planning if we did not explore in at least a limited way the need to plan for the efficient utilization of the present stock of manpower. This we do in Chapter VII, an important area, that has been the subject of recent assessments by two experts, J. White and A.G. Read, and upon whose reports we have drawn heavily in constructing our ideas and in basing the opinions expressed therein.

The efficient use of the country's stock of manpower is of prime importance to its development. One need not use force to direct it for there are institutions available to a free society for accomplishing the appropriate allocation of needed skills throughout the economy. Their development, however, takes time and resources to be effective. One such institution is a thorough going apprenticeship and vocational training program in private and public enterprises and other agencies. Others would be found in a rounded program of labour marketing including employment services, labour information (job opening or skill scarcities, survey on wages, salaries, hours of work, working conditions, fringe benefits, absenteeism, etc.), and comparative studies to determine how economic incentives may be utilized to provide a better allocation of labour skills.

In Appendix 1-F, will be found a working paper prepared by the staff of the Labour Division of the Department of Public Welfare and descriptive of that important agency's efforts in manpower marketing and in gathering significant labour information. It will bear close reading for those interested in and having concern in the need to step up the effectiveness of labour marketing machinery in Thailand.

In the final chapter, we spell out in some detail the nature and kind of data that should be gathered, the surveys that should be periodically conducted, and the many fruitful areas of research that should be undertaken if an adequate and timely body of factual information is to underlie manpower requirements forecasting and human resources planned development in the context of the nation's expressed development goals.

Our report terminates with a short statement concerning conclusions and recommendations that are additional to those incorporated in Chapter IV.

CHAPTER II

THE EDUCATIONAL SYSTEM AND HUMAN RESOURCE DEVELOPMENT IN THAILAND

The educational system of Thailand, like that of most nations, serves many purposes and satisfies many needs. The very diversity of its multiple roles gives one an appreciation of both the immense size of its task and the crucial importance of it.

Part of the complexity of its functions springs from the fact that different people hold widely different expectations of the educational system. Each citizen is likely to have his own set of reasons for sending his son or daughter to school, depending upon his own station in life. And each son and daughter will have his or her own expectations of the school. The peasant farmer in the Northeast may send his son to school in the hope that he will learn to read, the first in the family to do so. The shop keeper in Chiengmai may want his son to go to a trade school and learn a worthy vocation. The rice farmer of the Central Plain may be proud if his sons and daughters finish primary school and thereby improve their chances of getting employment in Bangkok-Thonburi during the off season when they are not needed in the fields. The Muslim peasant far to the south may wish only that his son learn to read the Holy Koran and for this purpose he will send him to the Mosque. The Chinese businessman in Bangkok has great faith in education, and wants his sons and daughters to proceed as far as they can. He is apt to be more interested in general than vocational education for his children because they will learn to earn a living by being apprentices in his own or a friend's business. The civil servant may want his children to go far in education, through secondary and university, in order to prepare themselves for high government employment or other professional work.

One need not multiply this list of individual expectations in order to realize the multiple functions which the education system of Thailand must serve. It serves many publics in every region of the country, and from all social and economic conditions. It is not, therefore, a single purpose institution, limited to serving only particular groups in particular ways, without due regard for the educational needs of others. It is a national system, dedicated to serving all the people, wherever they are and in whatever circumstances.

Thus far we have spoken only of individual expectations of education. There is yet another level of expectation, the national or governmental. Education in Thailand is an instrument of the state, designed to satisfy the needs of individuals, yes, but just as importantly to meet the requirements of a modern nation for educated citizens who carry on its values and traditions, and extend its economic development through agriculture, commerce, industry, research and higher learning. The state, therefore, has its own expectation of education, that it serve national goals through the educated human resources of the nation. The educational expectations of individuals and those of the state need not be in conflict, and it is hoped they would not. They are, however, different kinds of expectations. The state, because it is responsible for education, must make policies about the educational needs of the nation, organize programs to meet these needs, and supply funds for the purpose.

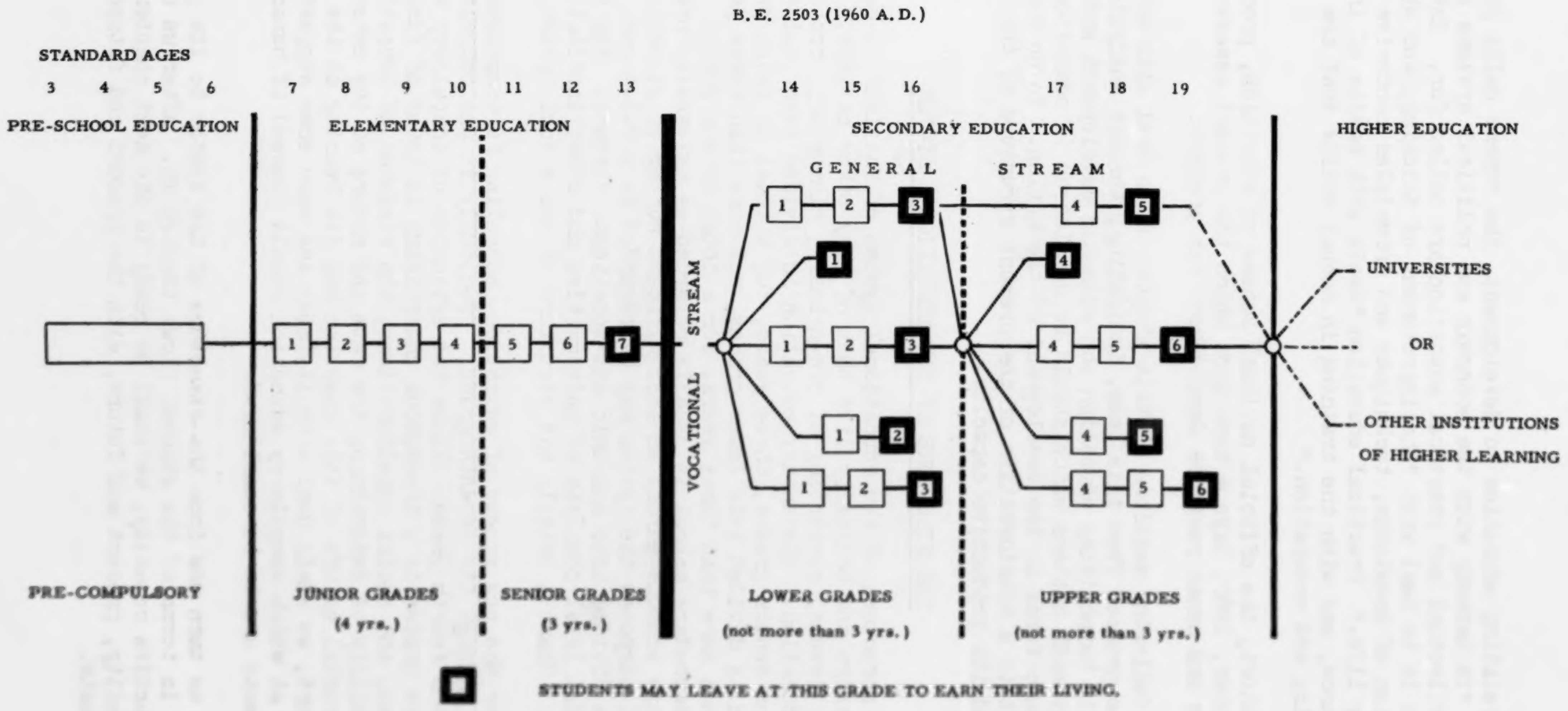
Let us turn now to how this brief analysis is related to the present preliminary assessment of education and human resource development in Thailand. It gives us a basis for defining the main educational focus of the assessment, indicating what is and what is not under consideration. The main emphasis is upon national expectations of education, rather than upon individual expectations. More specifically, the sharp focus is on how the educational system can meet the manpower requirements of Thailand's growing economy and produce the kind of human resources which can give direction and strength to social and economic development. The personal consumption aspects of education are subordinated in this assessment to the national needs of economic development, and the goal is to give guidance on how the educational system can enhance this development, rather than meet purely personal aspirations through education. This effort will call for a basic look at such matters as the relative emphasis on the different levels of education, the relative emphasis on the curricula or streams, and on the allocations of funds. Most of all, such an assessment carries us away from the conception that what is needed is simply an extension of education at all levels. It raises such questions as: Which levels and streams of education should be emphasized? Which de-emphasized? How can educational funds be spent so that they bring the greatest return on the investment? In raising such questions, the attempt is to shape the nation's education to the nation's social and economic needs.

It would be a mistake, however, to think that in subordinating the personal aspects of education to national policy we regard them as unimportant. They are important and cannot be ignored. All that we are indicating here is that the particular emphasis of this study is on the educational system as a developer of human resources en masse in order to help the nation achieve its stated economic goals.

THE NATIONAL SCHEME OF EDUCATION

The national scheme of education of B.E. 2503 (1960) makes clear the multiple functions served by the educational system. It also differentiates between personal and national functions. Further, it suggests the need for the educational system to support the economic development plans of the nation through educating human resources needed for such growth. One finds in the national scheme of education a good philosophical base for proceeding to develop the educational system in harmony with economic growth.

In terms of non-economic national goals, the scheme calls for Thai people who are "moral and cultured citizens, with discipline and responsibility, with good health, mental and physical, and with a democratic outlook." It proclaims that "education shall be carried out to serve the needs of the individual as well as those of society."



EDUCATIONAL SYSTEM - CHART 1. Thai School System According to National Scheme of Education

In relating education to development, the scheme calls for education which is "in harmony with the economic and political systems of the country." Both intellectual and practical education are called for. Intellectual education is to deal with "the improvement of thinking, and with the acquisition of knowledge, techniques and principles conducive to a useful and happy life." Practical education "deals with habits of industry, perseverance, and with the training in manual skills that are basic to a good living and occupation."

In short, the official national scheme of education, proclaimed on 20th October, 1960, lays a base upon which the present assessment of education and human resource development can proceed.

The following sections of this chapter which deal with education will attempt to proceed from this base, indicating, through analysis, what is involved in harmonizing education and economic development and suggesting the operational matters which should be considered if education is to be a more dynamic force in the development of the nation. To do this we must turn first to a consideration of the present structure of the educational system and its productive capacity.

THE STRUCTURE OF THE EDUCATIONAL SYSTEM

The structure of the educational system of Thailand is conventional in its design and basically like that of many other nations. It is divided into four levels, consisting of pre-primary, elementary, secondary, and higher education. Elementary education is divided into junior grades, four years, and senior grades, three years, for a total of seven years. Secondary education is divided into lower grades, not more than three years, and upper grades, not more than three years, for a total of six years. The last year of secondary school is usually regarded as university preparatory, and pre-primary schools enroll an insignificant number of students; so for practical purposes the system may be regarded as a 7-5-4 one. The secondary school is divided into academic and vocational streams. The higher educational level consists of universities and other institutions of higher learning. Chart 1 details the structure of the school system.

Under the new scheme of education, schooling is compulsory for children through the seventh grade. Previously it was compulsory only through the fourth grade. Since the extension of compulsory education to three more grades is a tremendous undertaking in terms of finance, teachers, facilities, and social considerations, the Minister of Education has the responsibility of determining the rate and nature of the extension. Because of the crucial nature of this question and its bearing on the subject of this report, we shall deal with it later and make some suggestions about the rate at which compulsory education should proceed if human resource requirements are to be considered.

Let us turn now from the structure of the system to its productive capacity in terms of the student flows through it. After we understand its productive capacity, we shall be ready in the next chapter to compare this capacity, present and future, with the present and future manpower requirements.

THE PRODUCTIVE CAPACITY OF THE EDUCATIONAL SYSTEM

The working paper on the "Structure and Composition of the Student Population of Thailand" gives both a panoramic and detailed view of the present student population. In addition, it analyzes past trends and likely future dimensions. Here we are interested in highlighting certain aspects of the structure and composition of the present student population in order to indicate where the students are in the structure. The composition of the student "mix," and the numbers who leave the educational system, and presumably enter the economy, and from what levels.

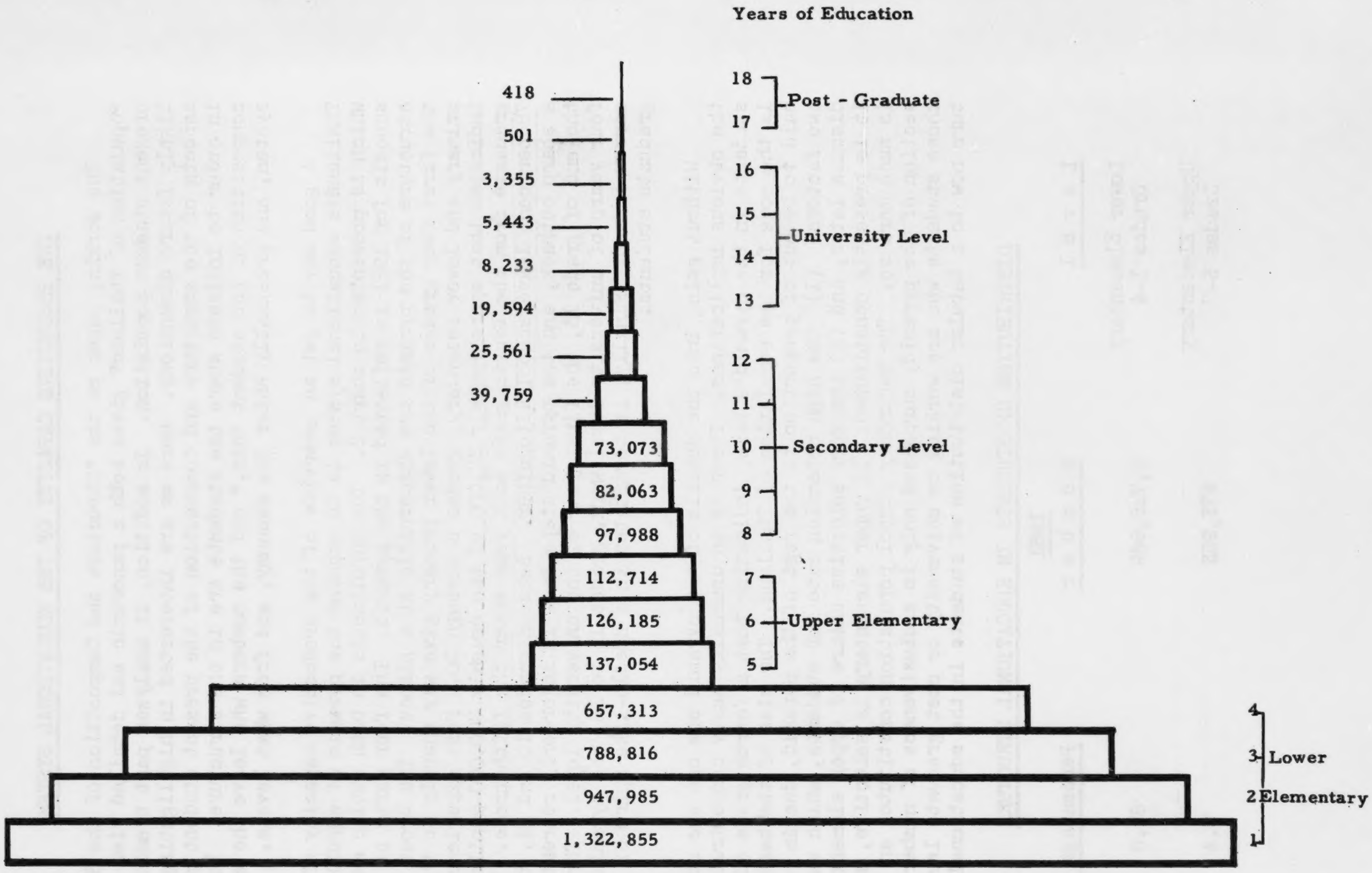
A good way to get an overview of the productive capacity of Thailand's educational system is to examine the pyramid of enrollments which is presented in chart 2. The enrollments in both public and private schools for 1961 is reflected in the pyramid. The four parts of the basic structure of the pyramid are discernible at a glance. The broad base of the first four grades of the lower primary give way sharply to the upper primary and lower secondary, grades 5 through 10. Past experience indicates that approximately 22,000 of the roughly 600,000 pupils who graduate from the fourth grade each year enter the fifth grade. The other 78 per cent leave school altogether. Between grades 10 and 11, there is a sharp cutback, and the pyramid steps back in an orderly retreat until the end of grade 13, the first year of the university level. Through the four years of university level work, grades 13 to 16, the pyramid is narrow indeed. Finally, it terminates in a needle-like spire of post graduate students.

Without going into the details of the pyramid one can see some of the obvious implications. There is an unusually heavy concentration of students in the pyramid's base, indicating that a fourth grade education is the mode for the population of Thailand. The size of the base may be said to be out of proportion to the rest of the pyramid, due in part to two factors: (1) the high retention rate for students, which we shall discuss later, and (2) the very selective nature of upper elementary, as it is presently constituted. If upper elementary is selective, secondary is much more so. The secondary school population constitutes an elite section of the pyramid, surpassed only in exclusiveness of numbers by those students who are working on university or post graduate levels. We turn now to a tabular distribution of students in the educational structure.

DISTRIBUTION OF STUDENTS IN EDUCATIONAL STRUCTURE

1961

Level	Number	Percentage of Total
Lower Elementary Grades 1-4	3,716,969	83.6
Upper Elementary Grades 5-7	373,953	8.4



EDUCATIONAL SYSTEM - CHART 2. Public and Private School Enrollments, 1961

Level	Number	Percentage of Total
Secondary		
Lower Grades 8-10	253,124	5.7
Upper Grades 11-12	65,320	1.5
University and	36,625	
Post Graduate	919	.8
TOTAL	4,446,910	100.0

Thus far we have viewed the educational pyramid in terms of the students within it. Another way to view it is in terms of the numbers of students who leave the school system each year, either through graduation, or by personal choice, or by the force of circumstances. These are the persons who are available for employment each year from the educational system. These figures are difficult to compute with accuracy, but the following table will give a general and reasonably accurate view of the numbers of students who left the school system, and at what level, in the year 1961.

NUMBERS OF STUDENTS LEAVING SCHOOL
1961

GRADE LEVEL	NUMBERS LEAVING SCHOOL
1-4	520,000
5	11,000
6	15,000
7	15,000
8	15,000
9	9,000
10	33,000
11	15,000
12	7,000
13	10,000
14	3,000
15	2,000
16	3,000
17	100
18	400

This table simply reinforces, in another way, the salient features of the educational structure of Thailand. Students leave the educational system in large numbers at selected points, with the great percentage leaving at the fourth grade or below. The next major drop-out point is the 10th grade, followed by a relatively heavy drop-out at the eleventh grade. The year of university entrance, the 13th grade, is another point of major drop-out.

Speaking in only general terms, from these estimates one can see implications for both the numbers of people, and their level of education, who entered the employment market in 1961. The vast majority compete for employment with a fourth grade education or less. From the 5th to the 9th grade there was a steady flow of students into the economy, averaging about 13,000 per year, who competed for employment with upper elementary and lower secondary education competencies. A large number, 33,000, went forth with a tenth grade education. Thirty-two thousand left school with 11-13 years of education, 8,000 with some level of college training. Five hundred sought their fortunes armed with post-graduate work.

Still another way of viewing this matter is to determine how many students stay in the school system in comparison with those who leave. Chart 3 indicates the retention of students per each 1,000 enrolled at the different levels of the educational system.

It will be noted that of one thousand students entering grade 1, 696 enroll in grade 4. Of these only 149 enter grade 5, and of these 31 enter grade 12.

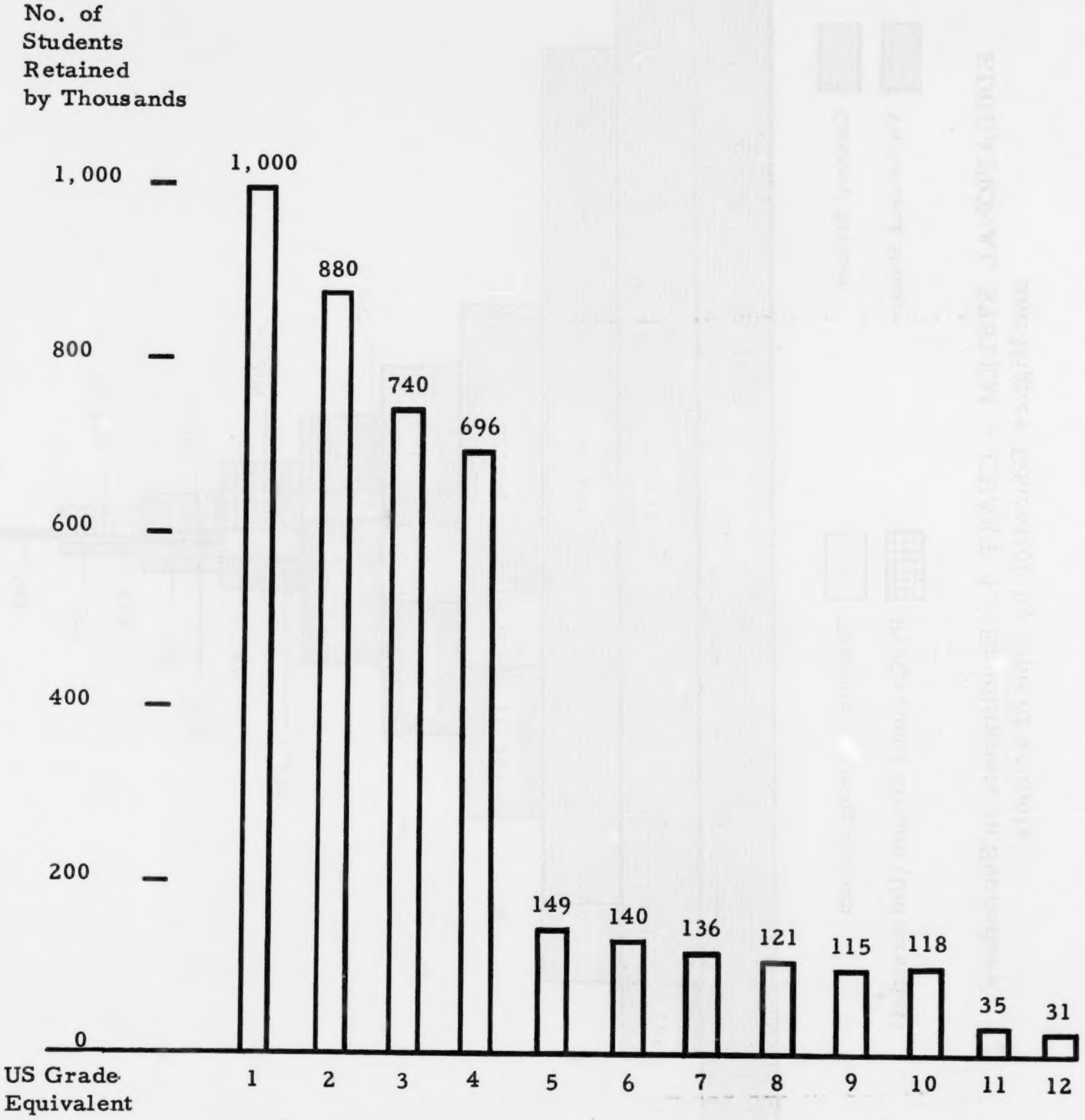
Thus far we have dealt only with the gross aspects of the productive capacity of the educational system. We should turn now to the student composition within the structure in order to determine the numbers of people in the different kinds of curricular streams at the different levels.

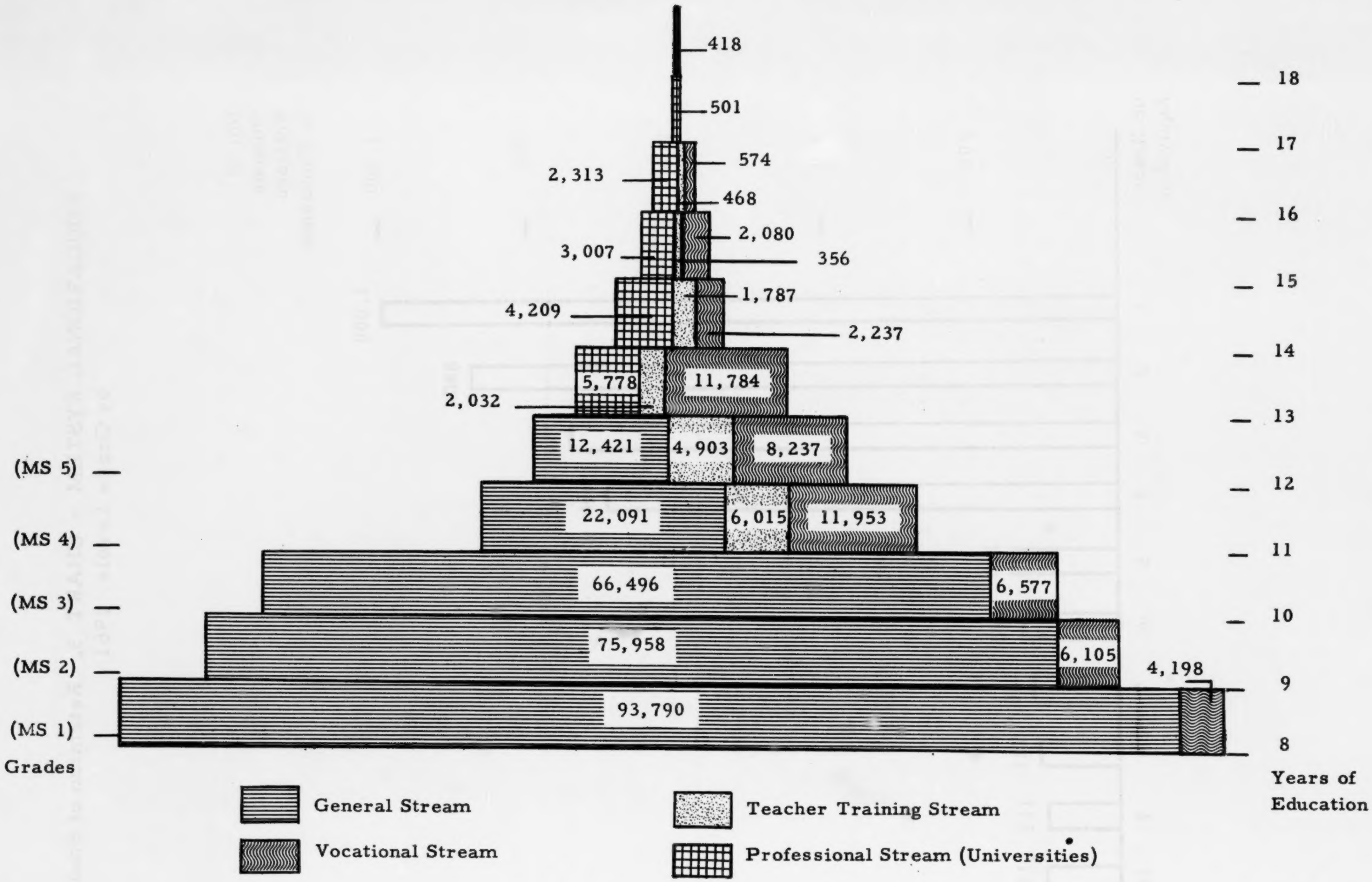
THE COMPOSITION OF THE STUDENT POPULATION

For our purposes here, we shall focus only on secondary and higher education, taking the upper portion of the basic educational pyramid presented earlier. Chart 4 presents the pyramid from grade eight, the beginning of secondary, and following through post doctoral study. Indicated are the general, vocational, teacher training, and professional streams.

From this pyramid, one can conceptualize the general allocations of students within the educational structure. Especially noticeable is the large number of students within the general secondary stream as compared to those in the vocational stream. Marked, too, are the very small enrollments in the lower vocational levels, grades 8, 9 and 10, as compared to vocational enrollments in the upper levels, 11, 12 and 13. This tendency toward weakening of vocational enrollments at the lower levels has real implications for the conduct of vocational education in Thailand and will be explored in some detail in the section on vocational education. The relatively heavy enrollments in teacher education at grades 11 and 12 are the main sources of supply for elementary teachers. Those in the upper levels are the main source of supply for secondary schools and teacher training colleges. The professional university stream narrows considerably as it moves from the 13th to the 16th grade levels, accounted for largely by persons in less than four year programs, failures and drop-outs.

EDUCATIONAL SYSTEM - CHART 3. Retention of Students by Grade Levels, 1961





EDUCATIONAL SYSTEM - CHART 4. Enrollments in Secondary and Higher Education by type of schools

Below in table form are the numbers of students in each stream and the percentage that each group constitutes of the total number of students, grades 8-18, in 1961.

SECONDARY AND HIGHER STUDENT POPULATION BY STREAMS
1961

STREAM	NUMBER	PERCENTAGE
General Stream	270,756	76.0
Vocational	53,745	15.1
Teacher Training	15,559	4.4
Higher Education	16,226	4.5
TOTAL	356,286	100.0

The above table focuses sharply on the large number of students in the general secondary stream, constituting as they do 76 per cent of the student population above the 8th grade. The vocational stream, also, is a significant stream, constituting 15.1 per cent of the total. Teacher training and higher education constitute almost the same proportion of the student population, 4.4 and 4.5 per cent respectively.

Summary: It has been the purpose of this chapter to present a picture of the educational system of Thailand in terms of its multiple purposes and functions, its structure, student composition and productive capacity, both in those who graduate and those who leave the system for other reasons. This data will give us a basis later for analyzing the educational system with respect to its capacity for meeting economic and manpower requirements.

CHAPTER III

MANPOWER DEMAND

The Joint Task Force made several estimates of requirements for manpower. Most of these estimates proceeded from what may be termed a "macro-economic" approach by which we tried to determine the whole Kingdom's total demand by educational level or by occupation. The use of the macro-economic approach also means that economic (exclusive of social or cultural) requirements were what we set out to measure.*

In Appendixes A and B, we present for the technical reader the detail of the several projected demand estimates, and their derivations. Here we present only certain of the estimates that appear to be the most useful, together with an interpretation of the pattern of manpower needs that they suggest. These are all based on the "economic output" method as more fully explained below.

Our basic method was to estimate Thailand's required manpower "stock" at two target years in the future. "Stock" means the composition of Thailand's population at a particular point in time, described by educational attainment (years of schooling completed), by economic sector, and by occupation.

The target years selected are 1966 and 1980. 1966 is the end of the current six year plan and is the farthest year for which the NEDB has made economic projections by sector. 1980 was chosen because it is the final year of a careful estimate of Thailand's future population and labor force. Our methods give the flows of graduates required at each educational level over the six and twenty year intervals ending 1966 and 1980, respectively. The annual average number of graduates are accordingly the demands that apply to the mid-years of the intervals, or 1963 and 1970, respectively. Rates for other years up to 1980 could be calculated. The 1963 estimate is useful primarily for comparisons with the current capacity of the educational system. It gives an indication whether the educational system is now keeping up with economic requirements. For 1970, however, there is time to undertake limited programs that will assist in adjusting educational output to needs, if these or other output goals are adopted.

Despite having to prepare the demand estimates rapidly and from somewhat less complete data than we might have liked, we believe that the results presented here are sufficiently reliable to be the basis of manpower and educational planning for the first round of comparing demand and supply and making indicated reallocations. We may say this because a fairly consistent pattern of results came from the several estimates. This was particularly true for those estimates that incorporated substantial economic analysis to determine the future structure of the labor force. As in all planning, it will be essential that manpower and educational needs be restudied periodically. These periods should be when important new data become available, or when alternative economic development plans are being evaluated. An example of the availability of new data will be the returns from the 1963 censuses of industry and of agriculture.

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* Allowance was made, however, for the educational needs of the whole population, not just of the Labor Force.

Following are the estimated graduates required for 1963 and 1970, taken from the adopted estimates:

NUMBER OF STUDENTS PER YEAR COMPLETING GRADE SHOWN:			
	1963		1970
	Probable Actual	Demand*	Demand**
University	2,550	1,957	4,973
Grade 12 (Academic and Vocational)	21,214	39,238	59,861
Grade 7	85,880	116,345	201,636

*See Estimate C-2, Appendix A

**See Estimate B-2, Appendix A

From the foregoing it can be seen that the output of university graduates in 1963 appears to be in excess of requirements, although by 1970 considerable expansion will be required. There is also a serious deficit at secondary level. The deficits at 7th grade and 4th grade levels are less important to the economy than those at 12th grade levels.

The increased demand for secondary graduates for both target years is easy to account for. The economy of Thailand, as it develops, is changing in composition. These changes give more prominence to those economic sectors which depend upon a work force made up of a larger proportion of those who have a good general education through secondary or who have secondary level vocational training. Such people either have middle-level manpower proficiencies or are trainable on the job to such proficiencies.

The question may be raised as to possible consequences of not meeting the requirements for secondary graduates. Our methods are not precise enough for us to say that such a deficit will definitely prevent achieving desired economic growth. Over the short run, an economy can compensate somewhat for inadequate educational attainment of its manpower by such means as superior on-the-job training, borrowing techniques and know-how from abroad, reducing underemployment, and improvements in physical capital. But the pace of development will sooner or later be limited by manpower proficiencies, one key measure of which are the educational attainments estimated here. It is for this reason that we urge Thai government policy makers to strive over the long run to give priority to the capacity and quality of secondary education suggested by our findings.

Another way to express manpower requirements is by occupational classification. We prepared estimates of the occupational composition of the 1966 and the 1980 Labor Force, broken down by educational attainment. The two estimates used different methods and coverage so they are not comparable with each other. Both, however, provide important indicators of the jobs that will have to be filled and hence of the amounts and kinds of education and training that will equip the labor force appropriately. The breakdowns presented below include only those requiring an educational attainment of secondary school or above, since this group represents the middle level and high level manpower which is of top priority in economic growth.

The occupational requirements for the six years ending 1966 were prepared for selected sectors of the economy: manufacturing, trade and finance; transportation; communication; power and services. These sectors should account for 57% of gross national product in 1966. Omitted were agriculture, forestry, fishing, mining and construction.

NET ADDITIONS TO THE LABOR FORCE IN SELECTED SECTORS,
1960-1966

	University Graduates		12th Grade Graduates	
	No.	%	No.	%
Managers	2,309	16.6	4,150	7.8
Professional and Technical	10,600	83.4	21,200	39.3
Clerical and Sales	-	-	10,600	19.8
Skilled and Semi-skilled	-	-	17,700	33.1
Total	12,909	100.0	53,650	100.0

(Derived from Table D-1)
Total additions to Labor Force 1960-1966, all sectors = 3,520,000.

As shown in the foregoing table, the heaviest requirements at University level will be those with a professional and technical training in such fields as engineering, the physical and biological sciences, medicine, and the social sciences. A substantial number of managers with training in administration will also be required.

At the secondary level, technicians are in largest demand, followed closely by skilled and semi-skilled workers. Both of these occupations can be filled by vocational school graduates of 12th (sometimes 14th) grade level. From these requirements we estimate that approximately 60% of middle level manpower needs of secondary school attainments will be in positions that could benefit from vocational school training. We say "could benefit" because this vocational school training must be of an adequate quality and must be well articulated with the needs of employing establishments. This "stock" of manpower converts into an annual demand of 6,000 vocational school graduates (12th grade) per year for the period ending 1966.

The occupational study made for 1980 covered the entire labor force, not just selected sectors. However, the occupational distribution for 1980 cannot be as reliable as that for 1966, since we did not have detailed trends by industry and occupation as we did for the 1966 distribution in selected sectors. The occupational composition of the middle and high level part of the 1980 Labor Force is projected as follows:

STOCK OF MIDDLE AND HIGH-LEVEL MANPOWER

LABOR FORCE IN 1980

	University Graduates		12th Grade Graduates	
	No.	%	No.	%
Workers in Agriculture, Forestry and Fishing	2,488	2.68	133,052	13.25
Professional & Technical	51,135	55.15	447,975	44.60
Administrative	5,896	6.36	58,321	5.81
Clerical	17,723	19.11	213,000	21.21
Sales	3,030	3.27	51,365	5.11
Miners	142	.15	9,382	.94
Transport & Communications	1,203	1.30	12,678	1.26
Craftsmen Laborers	8,027	8.66	46,429	4.62
Service Workers	2,730	2.94	23,244	2.31
Not elsewhere classified	354	.38	8,875	.89
Total Stock. . .	92,728	100.00	1,004,321	100.00

See Table B-2, lines 1 thru 11.
Total Labor Force in 1980 = 23,700,000

Again, the heaviest demands come in the occupation "professional and technical." A substantial number of secondary graduates are also required in the occupations of "clerical" and "agricultural workers", followed next by "administrative", "salesmen", and "craftsmen".

The above summarizes our estimates of demand by educational attainment and by occupation. We are now ready to compare the above requirements of Thailand's educational system to supply graduates. Then we shall discuss the implications that these comparisons may have for educational and economic development planning.

CHAPTER IV

ADJUSTING EDUCATIONAL SUPPLY TO MANPOWER DEMAND

The chapter on manpower requirements presents the economic need for graduates from different levels of the educational system for 1963 and 1970. We are now ready to compare these present and projected manpower demands with the actual outputs of the educational system. Our purpose in making this comparative analysis is to (1) determine quantitatively the shortages or surpluses of graduates, (2) to indicate at what educational levels the shortages or surpluses occur, (3) to indicate the relative position of each level in respect to achieving manpower demands, and (4) to suggest the educational meaning of the comparisons in terms of priorities and the allocation of educational resources.

In a sense these comparisons are the central focus of the preliminary assessment on education and human resource development in Thailand, the place where the data gathered and developed on both the economic-manpower side and the education side converge. In this convergence of education supply with manpower need, we shall be able to see clearly where the educational system stands in its efforts to produce graduates needed in Thailand's developing economy. Further, this comparison should suggest broad educational guidelines for the future, as well as specific actions for the present.

This comparison, then, has crucial importance for future educational policy. Just as importantly, it has crucial importance for economic and manpower policy. If education is to meet its manpower commitments, there must be adjustments and support within the economy. If education falls short of meeting its manpower requirements, there are similarly strong implications for what happens in the economy.

It will be remembered that in chapter three only the preferred manpower projections are given. The reader is referred to the technical working paper on manpower demand in volume two for further details. In the present chapter we use the same projections as found in chapter three and commend to the reader the working paper in volume two entitled: "Educational investments with respect to human resource requirements."

In this working paper each of the economic-manpower projections is compared with educational supply projections, and analyzed. The surpluses and shortages are spelled out, as well as the financial implications for achieving the several projections.

In the present chapter we highlight these matters and give special emphasis to what the comparisons of manpower demands with educational supply mean for educational policy and practice. More specifically, we shall first bring the respective projections together for a brief overview of their significance; then we shall look at their particular significance for the elementary, secondary, and higher education.

EDUCATIONAL SUPPLY AND MANPOWER DEMAND COMPARED

It will be recalled that the economic demand for graduates is stated for 1963 and 1970. First we look at 1963. The 1963 demand is compared with the 1963 supply and the difference is computed for each of the levels of education. This data is presented in the table which follows:

1963 Economic Demand For Graduates

	DEMAND	PREDICTED GRADUATES	DIFFERENCE BETWEEN SUPPLY AND DEMAND
University	1,957	2,550	+593
Secondary	39,238	21,214	-18,024
Seventh Grade	116,345	85,800	-30,545
Fourth Grade	877,002	665,100	-211,902

It can be readily observed that at the university level there is a surplus of graduates of 593, although there is a shortage of 18,024 for the 12th grade, 30,545 for the 7th grade, and 211,902 for the 4th grade.

In order that we can see how the 1970 demands compare with those of 1963, we turn to the table which presents data for the former.

1970 Economic-Occupational Demand For Graduates

	DEMAND	PREDICTED GRADUATES	DIFFERENCE BETWEEN SUPPLY AND DEMAND
University	4,973	2,950	-2,023
Secondary	59,861	39,114	-20,747
Seventh Grade	201,636	337,040	+135,404
Fourth Grade	800,000	816,570	+16,570

In this table it is apparent that by 1970 the modest surplus in university level graduates of 1963 will have turned into a deficit of 2,023. The deficit in secondary graduates will remain about the same as before, specifically 20,747. The 1963 deficit of 30,545 in 7th grade graduates has turned into a surplus of 135,404 by 1970. Fourth grade economic projections call for about the same number of graduates in 1970 as in 1963.

AN OVERVIEW OF THE COMPARISONS

Several matters stand out immediately in the comparisons for both 1963 and 1970. The fourth and seventh grades present no particular problem as far as meeting the economic demands are concerned. The universities in 1963 were comfortably within the target range set for manpower requirements at the higher education level. For 1970 the deficit of 2,023 graduates is quite large, but not at all overwhelming, and within reach with extended effort. It is at the secondary level where the deficit is serious both for the 1963 and 1970 projections. This finding will receive major attention in this report, both in terms of analysis and recommendations.

This result is not surprising in the light of comparative experience with the manpower needs of developing countries. As a country moves from an agricultural to an industrial economy, there is a gradually increasing demand for persons with higher levels of training. The lower skill requirements of an agricultural economy give way to the higher skill requirements associated with industrialization. Primary education which was adequate at an earlier time becomes less and less utilitarian as the economy develops, and more and more people with higher levels of training are required.

Let us turn now to a specific examination of the educational implications of these comparisons for the different levels of education.

PRIMARY EDUCATION

The economic-occupational demands for 1970 call for approximately 800,000 graduates from the fourth grade and 201,636 from the seventh grade. The natural increase in students will largely take care of this demand without resorting to forced expansion of the primary system.

In a sense, this is a fortunate circumstance in which the primary schools find themselves. The upper levels of the school system can be no better than the lower levels and quality at the top must be nourished by quality from the bottom.

The primary schools of Thailand, because they have been beset by major problems of all kinds, have not had the needed resources to concentrate on quality. If they can be relieved of the necessity of rapid expansion, for which they are really not prepared, they can consolidate past gains and build a solid quality base for the years ahead. One of the most serious problems that the primary schools should tackle at once is that of the high number of repeaters.

Failures and Retentions in the Primary Schools

If students progressed in an orderly fashion through the grades according to chronological ages, the primary schools of Thailand would have far fewer students than they do. Due to failure, retention, and repeating, there is a congestion of pupils in the first four grades, which places an unusually heavy and needless burden on the system. As is pointed out in the related working paper in volume two, the number of pupils who repeat grade one alone each year exceeds the combined number of students in all the secondary schools, vocational schools, teacher training colleges, and universities in the entire kingdom. These repeaters require the services of 10,000 teachers, twice the yearly number of graduates from the teacher training schools of the country.

Dr. Boonserm Weesakul has analyzed this matter statistically and perceptively in a report entitled "Analysis and Interpretation of Educational Statistics and Enrollment Projection." Dr. Boonserm points out that, according to the 1960 census, there were 2.98 million children between 7 and 10 years of age, the normal age range of children in grades 1 to 4. Under normal conditions this would be the approximate number of children in school. Yet, in fact, there were 3.6 million pupils in the primary school, far more than would be expected in an efficiently-operated educational system with only 4 years of compulsory education. Dr. Boonserm presents a table which compares the number of pupils in each grade of the primary school with the actual number of children in the age group corresponding to the grade. A child 7 years of age, for example, should be in grade 1, a child 8 years of age in grade 2, etc. The difference between expected enrollments and actual enrollments is then computed. This difference represents the number of students in each grade who would not be there had they moved through the grades in an orderly and expected fashion.

The table is presented here.

NUMBER OF PUPILS IN EACH GRADE COMPARED WITH NUMBER OF CHILDREN IN AGE GROUP (IN THOUSANDS)

	ENUMERATED ENROLLMENTS	NUMBERS OF CHILDREN CORRESPONDING TO GRADES	DIFFERENCES
Grade 1	1,336	799	+ 537
Grade 2	880	761	+ 119
Grade 3	748	725	+ 23
Grade 4	605	690	- 85

As can be seen from the table, in grade one there were 537,000 more pupils than should normally be there, in grade two 119,000, and grade three 23,000. Grade 4 fell short of the expected mark by 85,000, probably reflecting the high drop-out rate at this level.

The high failure rate in the primary school has two undesirable effects. First there is a "piling up" of enrollment, causing the average student to spend a longer time than he should in going through the system. Secondly, this piling up causes a premature dropping out by students, a waste of educational investment, since these children are not apt to be functionally literate before they leave school. Thus, the failure rate acts as an indicator of the efficiency of the system.

What can be done?

The long-range answer is to move toward automatic promotions on a chronological age basis, making school attendance, rather than the examination, the basis for promotion. This cannot be done, however, without due regard for other educational considerations. At the same time that children are being moved along on annual promotions, the quality of instruction must go steadily up or the children are the losers. But that the change over must come is abundantly clear, if the educational system is to step up to the economic demands of the country.

Implications for the Extension of Compulsory Education

There is another question strongly implied in the large retention and wastage figures and in the manpower requirements for elementary level: What implications do these factors have for the rate of extension of compulsory education from the fourth to the seventh grade? A caution signal is indicated by the available evidence. The question may be put another way: "At what point is an educational system 'ready' to extend compulsory education?" There are some pre-conditions which should exist before compulsory education can be extended with beneficial educational results. They may be stated as follows:

(1) The system should have demonstrated a reasonable capacity to enforce the compulsory education laws now in existence. Dr. Boonserm estimates that enforcement is 90% effective in terms of enrollments in school of children of primary school age.

(2) Actual attendance, in contrast to enrollments, should run at a reasonably high level. The present range of attendance runs from a low of 67.97 per cent in Education Region II to a high of 87.94% in Education Region III, with an average of 83.9 per cent in all regions. Actual attendance by age groups is also interesting to examine. Following are the actual percentages of attendance on the part of different age groups in primary school: 7 year olds 70.94 per cent, 8 year olds 93.56 per cent, 9 year olds 99 per cent, 10 year olds 86.54 per cent, 11 year olds 74.69 per cent.

(3) The system should have demonstrated reasonably high holding power with students. That is, the primary pyramid should not step sharply back as it moves up from grade 1 to 4.

(4) Conversely, the system should have a reasonably low wastage rate.

(5) The natural rate of increase in enrollment and attendance should be sufficiently high to indicate that "compulsory" attendance in a large measure will, in fact, be "voluntary" attendance on the part of children. In other words, compulsory education should follow, not precede, the fact of mass school attendance. Experience shows that it is largely futile to attempt to enforce school attendance, unless people want it anyway. In such case, enforcement is not needed.

(6) The retention or failure rate should be sufficiently low, perhaps 10% maximum, in order to indicate that students can move through the system on an orderly schedule on the basis of age-grade ratios.

(7) A reasonably high percentage of the teachers should be qualified by national standards. More than 46 per cent of the primary teachers in grades 1-4 are not qualified by these standards, and 58% of the first grade teachers are unqualified. This fact may help explain the 40 per cent failure rate in the first grade.

(8) The economic and manpower requirements of the country should indicate a need for the kind of manpower which would be produced by the extension of compulsory education.

On balance, if these criteria for the extension of compulsory education are applied to Thailand, a program of restrained, orderly extension of schooling opportunity would seem to be called for, rather than a stepped up plan of extended compulsory education. There is at present a 4% natural growth in primary enrollments. This is a wholesome figure and indicates the increasing attractiveness of primary education in Thailand. It will likely increase in the years ahead. What would seem to be indicated is a sound primary education program in order to (1) care for the natural growth of enrollment and even extend it modestly, (2) improve the retention rates and lower the drop-out rates, (3) develop a quality base for supporting automatic promotions, in order that the present congestion can be cleared from the primary schools, and (4) improve the quality of present teaching, while steadily increasing the number of new teachers to take care of increased enrollments.

What is suggested here is that the rate of extension of compulsory primary education be vitally linked to those factors which will increase its likelihood of success without penalizing the present program. That portion of the primary system which is extended can be no better than the base up on which it rests. If the extended portions actually divert resources from the already existing system, and thus deny this portion the added quality it needs, all children are the losers.

What would seem to be indicated in the present situation is a slow, orderly, and well planned extension, which handles well the natural growth in enrollments first and has due regard for improving the quality of the basic primary system as it now exists.

SECONDARY EDUCATION

As we indicated earlier the most serious short falls in graduates among all levels is at the 12th grade. To produce the necessary number of secondary graduates needed to meet the economic-development demand for 1970, the number of graduates would have to be tripled. This calls for a very major kind of effort and clearly would have to receive very high priority.

Actually, there is a potential student flow sufficient to achieve the near sixty thousand graduates called for without increasing enrollments at lower levels. This figure is only 15 per cent of the output expected from grade 7, and 5 per cent of the output expected from grade 4 in the same year. Sufficient numbers of students are there in order to meet the target of sixty thousand graduates by 1970. What is needed is a decrease in the attrition rate beyond 7th grade. If the attrition rate were decreased to 10 per cent per year, the secondary schools could graduate from grade 12 the students needed to meet the economic-occupation demands. There would have to be no increase in present enrollment in grade 8. This applies to the academic stream alone.

If the secondary vocational schools would also decrease their attrition rate, and these students are added to those in the academic stream, total secondary graduates would exceed the economic-occupational demand.

A major problem in achieving the 1970 economic-occupational goals would not be students: It would be finance. However, this may not be as formidable an obstacle as it at first appears to be. As the working paper points out, the increased budget required to achieve this expansion is comparatively small in relation to the total Ministry of Education budget. The secondary education budget is 15 per cent of the total Ministry budget. Specifically, there would be needed close to 10,000 new secondary teachers, and approximately 4,500 new classrooms, accounting for an average additional yearly cost of over forty-four million baht for both additional classrooms and teachers. Even though the financial task may theoretically not be an impossible one, practically it may be. What is called for is a rapidly stepped-up program of secondary expansion which is consistent with other financial needs, but which recognizes in secondary education a clear and high priority.

Even more critical than finance is the problem of training sufficient teachers to handle increased secondary enrollments. As the working paper o teacher supply points out, Thailand is reasonably well equipped to produce secondary teachers for enrollments as presently projected. In order to produce the 10,000 more teachers needed to meet the economic-manpower demands, a very major additional effort will have to be mounted.

What Kind of Secondary Education?

We turn now to one of the most critical questions raised by this report: What kind of secondary education is the economic demand really asking for? Is it asking for more of the same kind of secondary education that currently prevails in Thailand? Or, is it asking for a new emphasis and direction?

It would be natural to assume that what is called for is simply more secondary graduates of the same kind now being produced. And, it would be understandable if such a recommendation were received with skepticism. Common experience indicates that there are too many of these graduates being produced now, far more than can enter the university. In fact, only one out of five secondary graduates can gain university admission. The others must seek employment for which they are frequently ill prepared, either psychologically or vocationally. Having made university entrance their goal, and having attended secondary schools which were to prepare them for achieving this goal, they naturally feel thwarted when denied admission. More of this kind of secondary education is not that being called for by the economic-occupational demand.

At the present time secondary education has two main streams. The academic, described above, and the vocational. The vocational stream is by definition aimed at building up competency for filling a particular kind of job. While these two streams accurately describe the internal operation of the secondary schools, they do not correctly reflect what happens to students after they leave the secondary schools. Upon graduation the academic stream actually becomes a vocational stream for those 4 out of 5 students who do not enter higher education, and for the vast number of students who drop out before the 12th grade. At this point it is well to keep in mind that the vocational schools enroll only 15 per cent of the secondary student population. This means that for the vast majority of students the academic stream is in fact the major vocational stream.

Yet, curiously, it is not now regarded as such and there is no educational policy to give guidance in the problem.

The Need for a Third Alternative

In the pages which follow it will be the position of this report that a 3rd alternative or stream should be initiated in the secondary school which recognizes the reality of the situation as it now exists and prepares students to meet it. It will be pointed out that a major shift in the composition of economic sectors is taking place in Thailand. This shift is witnessing the growth of occupations requiring a good general education at the secondary level. This growing need is not now being met by the secondary schools.

Specifically, it will be proposed that the secondary schools consider adding a third stream to the present two, and that this new stream be made a part of existing schools, rather than additional or separate. The new stream would be a general stream, terminal in nature, and strong in its general studies that have value for making a living. The new secondary program would thus divert a large proportion of those students who are now in the university preparatory streams into a stream specifically designed to meet their needs for making a living. The new secondary program would look as follows:

STREAMS	GOALS
Academic	Higher Education
General	12th grade graduation and general employment
Vocational	Graduation and technical employment

Earlier we raised the question about the kinds of secondary graduates called for in the economic development of Thailand. We are now ready to answer. The economic-occupational projections call for quality graduates of the kind who could be produced through the general and vocational streams. Thus, the recommendation is for an enlargement of these streams. improvement in quality, and a general reduction in the size of the academic stream.

We are now ready to turn to a more specific examination of each of these streams.

VOCATIONAL EDUCATION

The working paper on vocational education provides a wealth of data on vocational education in Thailand, and it is recommended reading for those who want to get a factual understanding of what is happening in this vital field. Vocational education, because of its crucial importance, is quite naturally an arena for lively discussion and argument. It is not the purpose of this section to enter this argument, though it would be realistic to assume that what follows may be used as a basis for partisan debate, even though this is not the intent. Still, there are crucial issues of educational policy involved in any discussion of vocational education, and these shall not be side stepped. What is here presented is an attempt to render some professional judgments about the future shape of vocational education in Thailand on the basis of the evidence at hand.

That Thailand needs and will need many more high quality vocational graduates is clear. The manpower requirements suggest that in 1963 Thailand needed altogether for its work force about 11,000 secondary school graduates. This figure is based upon an analysis of the positions available in industry for which a secondary education is useful. Of this total number of 11,000 positions, 6,000 may be regarded as positions in which the holder would benefit from a high quality vocational training.

Breaking this number down, it is suggested that 3,000 positions will be in skilled and semi-skilled areas such as craftsmen, machine operators, and minor supervisory jobs. Two thousand of these positions will be for sub-professional technicians, and 1,000 will be for skilled clerical, sales and bookkeeping personnel.

The questions that we raise in this section will have to do with priorities in vocational education and how it can be so structured that it will meet the requirements of the economy. In short, the main point of attack will be: How can vocational education be so structured, staffed, and operated in order that it will yield the highest social and economical return on the educational investment?

This section shall be divided into three parts. First, we shall state what seem to us to be some crucial questions surrounding vocational education. Second, we shall present data which indicates what we know, at least with a fair degree of certainty, about vocational education in Thailand. Lastly, we shall draw some conclusions which seem to flow from the data and the comparative experience of other countries.

Some Crucial Questions About Vocational Education

A discussion of vocational education raises very fundamental educational issues which need to be looked at whenever expansion of vocational education is under consideration. (The same may be said for academic or general education). Our purpose here is to state a few of these questions. No systematic set of answers will be attempted, though the questions are implicit in the discussion which follows. The purpose just now is to give them sharp focus.

1. Policy-wise what proportion of the secondary student population should be in vocational and what proportion in non-vocational streams? What is the proper balance for a country at Thailand's present stage of development?

2. Practically, what would be a reasonable percentage expectation for moving students into a vocational stream? In nineteen-fifty-four, 1.13 per cent of the Thai student population below the university level was in vocational streams. Eight years later, in 1962, one per cent of the student population was in vocational streams.

3. What is the meaning of the dwindling vocational enrollments, and apparently dwindling student demand, in the lower vocational streams?

4. What is the meaning of the increasing enrollments and student demand in the higher technical streams?

5. What is the educational and social significance of the fact that academic streams are increasing at a much faster rate than the upper vocational streams?

6. What evidence is there about the rate of unemployment among vocational graduates? How does it compare with unemployment among academic stream students?

7. Is there any evidence to indicate anything about the relative return on the investment in academic and vocational education?

8. At what level should vocational education be given in order to achieve the maximum return on the investment?

Data on Vocational Education

It will be impossible to answer fully questions like those posed above until we have much more research data than we have now, and until firm educational policy for vocational education has been determined.

We are not completely empty handed, however, certain existing data has strong implications in it and suggests some tentative answers. Here our purpose is to put down only what is strongly suggested by the facts in hand. We shall start with enrollment trends.

Enrollment Trends

Vocational enrollments have shown some interesting trends during the last four or five years, interesting in that enrollments at different levels have moved in different directions. This is clear in the table which follows:

VOCATIONAL EDUCATION - TABLE 1

Number of Vocational Students by Different Level

1958 - 1962

Year	Lower Level (U.S.Grade 5-6-7).	Upper Level (U.S.Grade 8-9-10)	Senior Level (U.S.Grade 11-12-13)	Technical Level (U.S.Grade 14-15)	Teacher Training Level	Short Courses	Total
1958	13,483	23,257	24,377	3,308	1,026	335	65,786
1959	7,574	25,631	29,170	4,612	1,151	402	68,540
1960	2,955	24,479	28,634	4,897	1,404	1,945	64,314
1961	398	17,561	29,633	4,900	1,291	1,921	55,704
1962	235*	10,481	27,011	4,761	1,235	4,417	48,140
TOTAL	24,645	101,409	138,825	22,478	6,107	9,020	302,484

*1963 - No students; this level is no longer operated.

From the years 1958-1962, enrollments at the lower level, grades 5, 6, and 7, fell sharply and the program was closed. At the upper level, grades 8, 9 and 10, enrollments fell to less than half of their former mark. Enrollments at the senior level, grades 11, 12, 13, increased slightly. The technical level, grades 14 and 15, showed a comfortable percentage increase. Vocational teacher training enrollments held their own with a slight increase. The most dramatic increases came at the short course level, due in part to the mobile unit program. Over-all vocational enrollments for the 1958-1962 period declined from 65,786 to 48,140.

To gain added perspective, we should compare vocational enrollment trends with trends in other comparable educational streams. The table below makes this comparison:

VOCATIONAL EDUCATION - TABLE 5

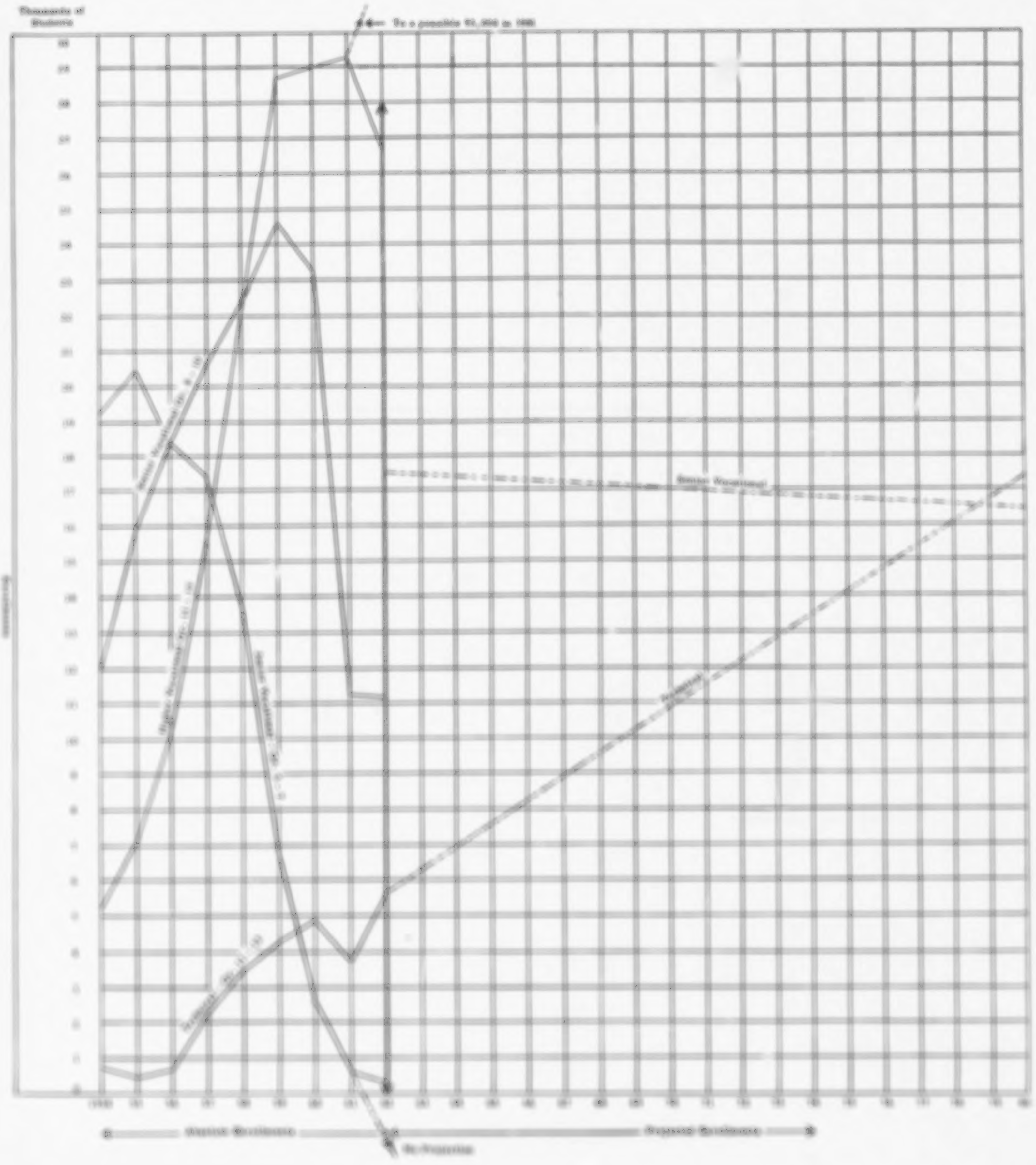
Enrollment Changes, by Level, 1958-1961

LEVEL	VOCATIONAL		OTHER STREAMS	
	Numerical	Per Cent	Numerical	Per Cent
Grades 5-6-7	- 13,086	- 97.0	+ 58,545	+ 18.5
Grades 8-9-10	- 5,896	- 24.5	+ 69,989	+ 42.1
Grades 11-12-13	+ 5,256	+ 21.5	+ 10,965	+ 121.9
*Technical Grades 14-15	+ 1,592	+ 48.1	No Comparable Data	
*Teacher Training	+ 309	+ 20.3	+ 5,549	+ 43.9
*Short Courses	+ 4,082	+1,218.5	No Comparable Data	

*Change, 1958-1962

It will be noted in this table that at the grade 8, 9, 10 level vocational enrollments were declining 24.5 per cent while other streams were increasing by 42.1 per cent. At grades 11, 12, 13, vocational enrollments were increasing 21.5 per cent while comparable streams were increasing 121.9 per cent. The technical level, grades 14 and 15, increased 48.1 per cent. There is no comparable data for the other streams. Vocational teacher training increased 20.3 per cent while other teacher training enrollments increased 43.9 per cent. Short courses increased their enrollments by 1,218.5 per cent. It is significant that

EDUCATIONAL SUPPLY - CHART 1. Projected Enrollments, 1954-1960, in Four Vocational Schools.



vocational enrollments bear a direct correlation to the level of instruction. While vocational programs in grades 8, 9, 10 were losing heavily, the technical level, grades 14 and 15, were gaining substantially.

Another way to view enrollment trends at the several vocational levels is to chart them as a graph. Chart number one indicates enrollment trends in the four vocational streams from 1954 to 1962 and projects them on to 1980, assuming they continue to follow past trends. The numbers are in terms of thousands. The unique differences among both the past trends and the projections at the four levels are striking.

The junior vocational level, grades 5-7, started at a relatively high enrollment level, more than 19,000 in 1954, gained briefly during the following year, and then plunged sharply to less than 1,000 in 1962 when the program was phased out. The same fate seems now in the making for enrollments in senior vocational, grades 8-10. This program started with 12,000 students in 1954, climbed well to a peak of nearly 25,000 in 1959, at which time it started to decline sharply to 11,000 in 1962. If the present trend continues, this program would likely phase out in time.

Higher vocational enrollment trends, grades 11-13, present a different picture. This program, started modestly with close to 5,000 students in 1954, climbed steadily to a peak of more than 29,000 in 1961, after which it took a modest drop to approximately 27,000 in 1962. Evidence is not available at this writing to explain the drop from 1962 to 1963, nor to indicate whether this decline will continue. However, if we assume that the general trend over the entire period will continue, a "line of best fit" would suggest that enrollments at the higher vocational level could rise to a possible 44,000 by 1980, assuming facilities, teachers, and financing were available.

The technical level, grades 11-13, shows steady and healthy enrollment increases. Beginning with less than 1,000 students in 1954, enrollments recorded nearly 6,000 by 1962. A "line of best fit" projection would indicate steadily rising growth for this highest level of vocational training, reaching close to the 18,000 mark in 1980.

Still another way to look at enrollment trends is to examine application-admission ratios. Through the study of these ratios one can get some perception of the demands for different levels of vocational programs. Application-admission ratios also give some indication of the selectivity which a school can exercise in admitting students. Theoretically, at least, schools with many more applicants than they can admit can select better students and thereby upgrade the quality of vocational students and graduates. Here again it is the higher levels of vocational education which have proportionately more applicants and can therefore be more selective. This is demonstrated in the chart below:

APPLICATION-ADMISSION RATIOS, BY LEVEL, 1960-1962
(Number Admitted per 100 Applications)

LEVEL	YEAR		
	1960	1961	1962
Grade 8-9-10	90	93	94
Grade 11-12-13	76	68	64
Grade 14-15	48	42	27
Teacher Training	75	27	28

As can be seen at a glance, the lower level schools admit practically all who apply, while the technical schools, grades 14 and 15, and teacher training schools can be quite selective. There is not enough data to establish a trend, but what we have would suggest that the lower levels may be becoming less selective while the upper levels are becoming more selective.

All the evidence taken together on vocational enrollments indicates clearly the weakening condition of lower educational enrollments and their unselective nature. By contrast, enrollments at the upper levels are dynamic and more selective.

We turn now to another important area, that of the employment of vocational graduates.

Employment

The need for more follow-up data on vocational school graduates is painfully apparent. Until such follow-up data is available, we can only speculate about vital questions such as these: (1) How many are employed? Unemployed?, (2) Are those who are employed working in areas for which they were trained?, (3) How many take positions for which they did not train?, (4) What is the quality of their work on the job?, and (5) How do these graduates appraise the value and quality of their training.

Two surveys are available which help to supply only suggestive answers to the above questions. A follow-up survey on the graduates of 1958 to 1962 from Bangkok Technical Institute was made while the Department of Public Welfare in 1962 conducted a survey of vocational graduates.

The Technical Institute survey gives the number of graduates for each year in the different curricula which are offered in the Institute. The attempt was to find out if the graduates went into (1) government service, (2) private organizations, or (3) further study. For the period under study there were 4,823 graduates, of whom 40 per cent did not reply to the questionnaire. Of the 2,876 who did respond, 2,411 were in government service, or almost 84 per cent. Two hundred fifty-six of the 2,876 were in private organizations, or almost 9 per cent. The remaining 7 per cent were engaged in further study. Of interest in this survey is the large number of graduates who found employment in the private sector. Of interest, too, is the fact that almost as large a group, 209, found it necessary or profitable to continue their studies.

The Department of Public Welfare used a survey sampling technique conducted by mail of the 1960 and 1961 graduates of public and private vocational schools of different types in the Bangkok-Thonburi area. In all, 25,466 persons graduated in these two years in the area, and of them, 4,000 persons were chosen for the sample. Usable replies were received from 1,831 graduates. Of these 1,831 graduates 1,011, about 55 per cent were employed, about 45 per cent unemployed. Of those employed 580, about 59 per cent were working at jobs considered to be related to their training. Of the 820 unemployed graduates, 701, or 85 per cent desired help in finding employment. More than one-third of the graduates, employed and unemployed, reported that they were "continuing study." Regarding the employed-unemployed ratios in the study, it is hard to say whether they are representative of the whole original sample of 4,000. It would seem reasonable to assume that graduates who are unemployed might be more likely to return such a questionnaire than those who were employed. Discounting this, however, the 45 per cent unemployed figure is still alarmingly high, especially when compared with the unemployment in the population as a whole, which is estimated to be 1 per cent.

These two studies are insufficient for drawing major conclusions, but they do raise major questions and strongly suggest the need for more research.

We turn now to a consideration of the quality of vocational education.

The Quality of Vocational Education

Quality of education is a difficult matter to assess, even when good factual data is available. When it is not available, one must depend upon direct observation, the experience of seasoned observers, and indirect data. Therefore, what follows should be considered as fragmentary evidence which may not be supported were more evidence available.

In the first place, vocational education, at this reading, does not seem to attract the best qualified students. The complex reasons for this situation are not the subject of this section. In most nations there is a hierarchy of educational choices, and in this hierarchy vocational education trends to have a low position, to be chosen after all other educational avenues have been tried. Such seems to be the case in

Thailand. Vocational education is chosen by students after other doors have been closed.

This condition sets in motion a downward quality spiral. Poor students encourage mediocre programs. Vocational teachers must be recruited from among these poor students who, in turn, learn to teach poorly. Poor quality is thus compounded. Further, poor students have difficulty in getting jobs which, in turn, gives vocational education a poor reputation among both other students and prospective employers.

Quality of vocational education in Thailand seems to improve as one progresses up the several levels. At the lower levels there is a noticeable lack of qualified teachers and instructional equipment. The curricula are not vital or fully developed. As one moves into the high vocational and technical levels, the quality of instruction reportedly improves and the curricula are richer in content.

Turning to the vocational teachers themselves, they appear to fall into the lower salary brackets for the entire public school teaching force. Further, there is a disproportionate share of them who are unqualified by Thailand standards. Again, this seems to be more true in the lower vocational levels. In 1962, 2,108 vocational teachers out of 4,670 were unqualified by National standards, or more than 45 per cent.

Vocational education is understandably expensive education. Good vocational education calls for good laboratories, equipment, and materials to work with. Vocational education in Thailand is needlessly expensive, especially at the lower levels because of the dwindling enrollment. Decreasing enrollments make for low teacher-student ratios and high costs. Teacher student ratios run about 1 to 7 in agricultural schools, 1 to 9 in trade schools, 1-15 in commercial and industrial schools, and 1 to 13 in technical and teacher training schools. On first thought one would expect that the very low teacher-pupil ratio, especially at the lower levels, would lead to better quality instruction in these areas. Limited evidence would not seem to support his conclusion. Quality instruction would seem to follow those programs where enrollments are more dynamic and are on the increase, and, incidentally, where teacher-pupil ratios are higher.

We turn briefly to baht-per-pupil costs at different vocational levels. Taking the year 1962, the following were the per pupil operating costs in the several levels of vocational education: trade school 2,215, business and industrial 1,990, agriculture 54,502, technical 2080, and short course 760. The capital baht-per-pupil costs were as follows for the same areas: trade school 337, business and industrial 526, agriculture 1,965, technical 33, and short course 75.

We can now compare baht-per-pupil costs in vocational education generally with those in other education departments. The overall average baht-per-pupil cost in the vocational department was 2,335. The Elementary and Adult Department average was 238, Secondary 1,368 and Teacher Training 2,791.

In both the operating and capital areas, the high agriculture per-pupil costs stand out. A more careful analysis of this item should be made. No doubt low enrollments play some role in these disproportionately high costs. Here again it may be reasonable to conjecture that there is no positive correlation between high baht-per-pupil costs and educational quality. In the case of vocational agriculture one would be led to believe on the basis of most sketchy evidence that the correlation is an inverse one.

We turn to a final consideration of quality in vocational education, and phrase it in the form of a question: To what extent have vocational schools sought out the participation of government, business and industry who employ their graduates? The evidence would indicate that limited attempts at such contacts have been made at Bangkok Technical, in the SEATO schools, and locally by directors in some of the higher vocational and technical schools. These have been exploratory efforts in the right direction and should be encouraged.

Overall, however, it should be said that vocational schools in Thailand operate in a vacuum, insolated from the dynamic changes which are taking place in the developing economy. Yet this is the economy they are designed to serve, and their justification as an education agency depends upon their ability to serve the employment and economic needs of the developing nation. There is no assurance at the present time that the jobs for which students are being trained are in fact those for which there is need, either in the present or in the future. Nor can that assurance come until there is a dynamic link built up between vocational schools and the business and industrial community. Until more data is available, this question will persist.

Is it possible that the dwindling enrollments at the lower levels of vocational education suggest that people outside the schools, students, parents, and prospective employers, have in fact made a decision about the value of certain programs and are adjusting their attitudes toward vocational education accordingly. The value of programs should be appraised within the schools themselves before the waste of a public judgment has been invoked.

We turn now briefly to some comments on policies for vocational education and some tentative conclusions.

Some Policy Suggestions Regarding Vocational Education

First, we return briefly to what was said earlier about the projected need for vocational education graduates. It will be recalled that the indicators point to a strong demand for secondary graduates, a large group of whom will hold positions in which they ought to benefit from the right kind of vocational education. The crucial question is: "What is the right kind?" Present evidence would indicate that the demand will be for a higher level of graduate in terms of quality than is now generally being turned out from vocational schools. In order to improve quality, a strong linkage to the employer will have to be developed. Those programs which presently demonstrate quality will need to be expanded and the quality of teacher training upgraded.

A system of priorities among the vocational levels should be developed. It is clear that there is great unevenness among the levels both in quality and attractiveness to students. What are the most productive vocational levels in terms of educational investment? The evidence we have would cast serious doubt on those programs below the tenth grade level, and the wisdom of carrying them on in their present form.

A crucial question here is how to interpret the dwindling enrollments at the lower levels. There are no doubt many factors at work, such as limited facilities, poor instruction, and inadequate budgets. Also, it should be remembered that formerly graduates of the seventh grade were taken for training as vocational teachers. In a move to upgrade vocational teacher training seventh grade graduates are no longer permitted to enter teacher training. Taking the teacher training group out obviously lowered the enrollment at this level.

These factors have to do with the internal operation of the school. What can be easily overlooked is that there are probably forces outside the school itself making for lower enrollments in these levels. A public judgment is possibly being rendered about the utility of vocational education below the tenth grade. The judgment may have many facets. For example, one facet may be that school children, in the maturation process, do not regard the matter of vocations seriously until they reach a certain level of maturity. Until they do reach this level, they are not greatly interested in learning about specific vocations, and are poor objects of educational investment.

More importantly, the low enrollments may indicate that the economy itself is rendering a judgment about the utility of lower level vocational programs. It may be saying several things: (1) that there is no dynamic need for students trained at these levels, (2) that such need as does exist is being cared for better in other ways, for example, in agricultural through the family system and in commerce and industry through the apprentice system, and (3) that the greatest need in agriculture, commerce, and industry is for competent graduates at higher vocational and technical levels.

We should say a further word about this last judgment, the increasing need for middle and upper level technical people. Evidence from other developing countries would cause one to place some faith in this judgment. The need is for competent technicians and higher vocational graduates who can do the middle range jobs required in an expanding economy. The need seems to apply to both the agricultural and industrial sectors. As the sophistication and complexity of the work increases, so does the demand for higher skills.

Little real evidence is available at the time of this assessment to support a program of across-the-board expansion of vocational education in Thailand. There is convincing evidence to support a sustained, orderly expansion of vocational education at the higher vocational and technical levels. In terms of educational investment and the returns therefrom, it would seem prudent to concentrate heavily on vocational and technical work beyond the tenth grade level and let the lower programs be absorbed into a general education stream.

THE ACADEMIC STREAM

The academic stream, as presently constituted, consists of almost everybody not included in the vocational stream. As we indicated earlier, it is in fact the vocational stream for the great percentage of secondary students, since only a few are able to gain university entrance.

It would probably be a better stream if it were itself more selective, and much smaller. Under the present structure and organization of the secondary system, students have no other real alternative but to enter the academic stream, if they do not wish to enter the vocational stream. As a result, many students enter this stream who are really not fit candidates for university entrance. The work for university preparation cannot, therefore, be sharply focused on the task at hand.

The place to create a selective group of higher-education bound students is early in the secondary school program. Through testing, counseling, and guidance, those students who are by intelligence and aptitude suited for higher education can be identified and admitted to the academic stream. A program can be specifically built for their needs and teachers can specialize in preparing students for higher education.

Such a program will considerably reduce the casualty rate at university admission time and also raise the quality of applicants. At the present time, nearly 20,000 students apply for university admission each year, and only 5,000 can be admitted. Both the personal and social consequences of such a high rejection rate are not in the best interests of the nation.

The problem has political, social and economic consequences. Politically, it leads to discontent and instability. Socially, it represents a waste of human energy and talent. Economically, it means that large amounts of money have been spent on the education of young people who cannot proceed to take advantage of that for which it was spent.

If the academic stream leading to university entrance can from the beginning be made a selective stream, high in quality, sound in instruction, and pointed specifically at competencies needed for success in the university, there will be fewer disappointments later on and the quality of those entering the university will be higher. Better quality in university applicants will mean a more efficient education at this level.

Let us turn now to the proposed new general stream.

The General Stream

Before pursuing further the value of introducing a terminal, general stream a good purpose may be served by getting some perspective on the problem of rising enrollments which now confront Thailand. If the problem can be seen in somewhat broader perspective, we may know better how to handle it. The problem of "What to do with all the students?" is common in most developing nations. Especially, the problem of "too many people trying to get into the university" baffles most developing nations.

The real reason for this situation lies far back in the development of the secondary system and the parallel development of constantly enlarging student bodies. In a historical sense, the tops of educational systems developed before the bottoms. That is, the upper levels of the system are likely to be developed along very elite and selective lines before there is large educational participation at the lower levels. Secondary education, in its early development, is always academic in nature and intended primarily as a basic preparation for the professions. Entrance to such elite secondary schools was obtained usually through preparation in small, private, lower schools. The total number of people in the population who were in school was infinitesimal. It is understandable why such schools had but one stream, an academic one.

The next stage which marks the development of the secondary school came with enlarging enrollments as the result of more and more people wanting to go to school. The older purely academic streams began to fail to meet the needs of more and more children in school. Increasing numbers of children were either looking for another educational alternative, useful to them but short of higher education, or they clearly were not qualified to enter the university preparatory stream. Vocational education programs began to arise during this period and to meet the needs of children who would go into that part of the labor force requiring manual and technical skills.

In most countries it was apparent from the beginning that the vocational streams would never become the dominant streams in terms of numbers of students. The size of the vocational streams varies from country to country, but in few does it become the stream through which most of the secondary students proceed.

As national development continues the desire for school admission continues to mount and other provisions must be made for a useful education for those students who find no challenge in vocational education and for some reason are not fit candidates for higher education. At this stage in educational development general education programs begin to emerge, terminal in nature, and definitely geared to making a living.

Throughout the stages of development of the secondary systems around the world, one thing is apparent. There is usually a time lag between the evident need for new streams and the actual reorganization of the secondary system to provide them. The academic streams persist as the main streams long after their real utility to the majority of the students has vanished.

The Thai secondary system may now be at this point. The academic stream is not actually a functional stream in terms of what students really do after they have left the stream. In short, the academic stream in the Thai secondary school is largely dysfunctional for all but those few who manage to find a university berth.

The general stream of the secondary school provides a 3rd alternative between the vocational and academic streams. Is there a need for it? Evidence would indicate that the need is strong. As the manpower assessment of this study indicates, there is a need in the economy for large numbers of secondary graduates who are broadly trained in mathematics, science, and applied areas, graduates who will be trainable on the job for many different kinds of positions in trades, sales, skilled and semi-skilled labor, commerce and minor executive and supervisory positions. These people, coupled with those technically trained from vocational schools, constitute the great middle level manpower group so desparately needed in a developing economy. Let us turn now to an economic and occupational analysis of this matter.

THE ECONOMIC-OCCUPATIONAL NEED FOR A GENERAL STREAM

The need for a general secondary stream has a solid base in the Thai economy and certain fundamental changes that are taking place within it. Here we wish to focus on two of these changes and their relevance to secondary education. These changes are:

1. The changing composition of economic sectors is accentuating the growth of occupations requiring a good, general secondary education.

2. The growing prominence of the "tertiary economic sector" over the "secondary economic sector" demands large numbers of employees with quality general secondary education.

Let us examine each of these items separately:

1. The changing composition of economic sectors

To get at this matter let us compare the distribution of employment in 1960 with that projected for 1966. Such a comparison will permit us to identify the rate of growth of different sectors and the accompanying demand for employees. The data in the table below was calculated from the employment projection of the Joint Task Force, and the Semi-Annual Employment Market Survey of the Department of Public Welfare. Using 100 as the base line for employment in 1960 the table projects the changes which will occur by 1966.

Index Numbers of 1966 Employment by Sector and Occupation (1960 Employment = 100)

SECTORS AND OCCUPATIONS	1966 Employment
Agriculture, fisheries, forestry, mining, and construction.	115.5
Trade and Finance, transportation, communication, power, services, and manufacturing:	130.6
Managers (Administrative	159.9
Professional and Technical	120.6
Clerical and Sales	152.5
Skilled and Semi-skilled	142.7
Unskilled	108.9

Note that primary industries (top line) are expected to grow only half as fast as secondary and tertiary industries (115.5 vs 130.6). Further, within the secondary and tertiary sectors, the fastest growing occupations are administrative (159.9) and clerical and sales (152.5), both of which demand a well rounded general education in mathematics, general science, civics, and language. In absolute size of employment, the unskilled will still be a large category in 1966, with 710,000 employed, but it is expected to grow much more slowly than the other occupations, as is shown by its 1966 index number being only 108.9.

2. The Growing Prominence of "tertiary economic sectors" in comparison to "secondary economic sectors."

The tertiary sectors include trade, banking, and services. In Thailand these sectors accounted for an employment of 1,110,000 in 1960, which is an employment twice as large as secondary sectors of manufacturing, construction, electricity, communications and transport. To repeat:

Tertiary Economic Sectors				Secondary Economic Sectors
Trade Banking Services	→	Employ twice as many people as	→	Manufacturing Construction Electricity Communications Transport

Now we should ask: What kind of educational qualifications does this large tertiary sector demand? Significantly, it is this sector that demands large numbers of employees with competence in language, general science, mathematics and a sound general education. These are the competencies which a good general secondary stream is designed to provide.

We should turn now to say a word about the kind of school best suited to provide this kind of instruction.

THE COMPREHENSIVE SCHOOL

We should say a word about the educational institution which is appropriate for carrying on programs like those described above. Such an institution is the comprehensive school which brings together within one school the several streams. Such a school has many advantages.

It is a relatively efficient and economic school to operate. The present Thai practice of operating several different kinds of secondary schools frequently in the same small town is economically wasteful and administratively inefficient. A comprehensive school raises the status of both vocational and general streams, since they are a part of the larger school, which gains a high status value of its own.

But the comprehensive school need not be a new school, built particularly for this purpose. A modest beginning can be made at once by adding general streams to both academic and vocational schools. In this way, comprehensive programs can gradually be built up and problems ironed out as the program progresses.

A final word about where to go from here. If the need for meeting the economic manpower demands is recognized as an important priority for secondary education, there may be wisdom in making the next step a study of secondary education. Such a study would concentrate on the secondary education needs of Thailand for the next decade, point out how to proceed to adjust the secondary system to the manpower requirements, and draw guidelines for the future. In fact, probably no new major programs of external financing should be drawn until such a study is made. Such a study project should certainly be worthy of external assistance.

UNIVERSITY EDUCATION

As we indicated earlier, the present supply of university graduates is nearly equal to the economic demand for graduates for 1963. By 1970 it is predicted that there will be a need for just over 2,023 more university graduates than are currently predicted for that year. To produce this increased number of graduates by 1970 would require approximately a 108 per cent increase in enrollments, a goal that does not appear to be within reach for the universities.

The universities of Thailand for the last several years have enjoyed the largest relative increases in budgets among all the educational sectors.

They are not in a relatively good position, even with additional support, to meet the economic-occupational demand for graduates. During the period 1958-1964, university budgets increased 181 per cent. Since 1959, the baht-per-pupil expenditures have increased 27.7 per cent.

The additional budget required for expansion sufficient to meet economic demands of 1970 is quite modest in relation to the total educational budget for Thailand. The estimated university budget for 1970 is approximately 300 million baht. Approximately 230 million more baht would be needed to turn out sufficient graduates to meet the economic-occupational requirements.

The expansion at the university level, like that at the secondary level, should not be "across the board." It should be a selective expansion centering on the sciences, applied sciences, such as engineering, and medicine and agriculture.

As in the case of secondary education it would seem advisable to make a careful study of the role of university education in achieving economic development targets in Thailand. Such a study could sharpen the areas for concentration and propose programs designed to help universities achieve manpower targets. Again, major external financing would be inadvisable until such a study is carried out. Such a study would certainly be worthy of external support.

A STRATEGY FOR EDUCATION AND HUMAN RESOURCE DEVELOPMENT

The first portion of this chapter dealing with the educational system in relation to manpower needs has had a number of things to say about strategies that might be employed to help the educational system step up to its full role in the development of human resources for economic growth. Here we simply bring these together in summary form for purposes of review and emphasis.

1. The primary schools are now turning out sufficient numbers of students to meet economic and manpower needs. With the estimated natural growth of the system, they will continue to do so. This should be regarded as a happy circumstance, an opportunity to concentrate on the solution of the problems which must be solved before the extension of the primary schools can safely take place. This assessment strongly supports the need for excellence in primary education in Thailand, and for financial resources to make it possible.

2. Secondary education is regarded as the area of greatest need. We hope we have made clear that the increased economic need for secondary graduates is not for university preparatory students. We recommend that this stream be made smaller and more selective.

The great need is both for vocational and broadly trained terminal secondary students who can fill the nation's need for middle level manpower. We have emphasized the need to (1) concentrate vocational efforts at the higher levels, and (2) to introduce and develop a strong general secondary stream.

3. The universities are in a good position to accelerate their contribution to high level manpower for the economy, by virtue of relatively adequate budgets in recent years and the opening up of new institutions. Even with strenuous efforts they will face great difficulty in achieving the stated goals.

If these educational and economic goals are to be met good educational planning will need to take place. We now turn in Chapter 5 to this important matter.

CHAPTER V

EDUCATIONAL PLANNING FOR HUMAN RESOURCE DEVELOPMENT

Previous chapters set forth priority items which grow out of the preliminary assessment of education and human resource development in Thailand. Implied throughout is the need for ways of dealing with educational priorities, of developing administrative machinery for getting decisions, and, having gotten them, of getting appropriate action based on decision.

The process calls for planning. Broadly speaking, educational planning has two major functions: (1) to provide ways of developing the kinds of data needed by policy makers in order to make intelligent decisions and (2) to provide ways for harmonizing educational plans with the overall social and economic goals of the nation. The working paper entitled "Educational Planning" deals with these two matters in some detail and with specific reference to the Thai situation. Developed in close cooperation and full consultation with the Ministry of Education and other agencies, this paper is recommended reading. In the present chapter we deal with some of the conditions which prompt the current widespread interest in educational planning, note the need for developing a national policy on education and development, and outline in broad strokes the structure essential for good planning.

THE URGENT NEED FOR EDUCATIONAL PLANNING

There are special reasons why educational planning is now an urgent priority in most developing countries. Here we look briefly at only a few of the conditions which compel us to plan wisely in education. There are a number of reasons why educational business cannot be conducted in the future as it has been in the past. Deep running social and economic forces are changing modern educational requirements, raising educational aspirations in all segments of the population, and placing unprecedented demands upon educational authorities for educating more and more students with constant or even dwindling resources. We shall discuss here four conditions which heighten the need to plan: (1) the population explosion, (2) rising educational aspirations, (3) a growing interest in the economic returns of education, and (4) the scarcity of development resources.

The Population Explosion

The population explosion for the demographer is a matter for close study of tables, charts and line graphs. For educators the statistics are real children pressing for school entrance, frequently where there are no places. Jammed-up classrooms present problems of instruction for both teachers and educational administrators. The effort to maintain quality in the face of increasing quantities of students is too often a futile one, for both teachers and students.

Nor does the problems stop within the school. Children on the outside who have been denied admission frequently become social and economic liabilities. They represent wasted human resources of the nation since their natural talents go undeveloped. Clearly, rising birth rates mean rising problems for education, and increasing need to plan wisely for the future.

Rising Educational Aspirations

The population boom is not the only factor increasing pressure for school admission. More and more children than ever before are wanting to go to school, and from more different segments of society. And they want to go to school longer than ever before. Education for the elite alone is largely a thing of the past. The so-called "revolution of rising expectations" is penetrating far down the social scale, and people are no longer content to remain as they were. More particularly, they are not content to have their children remain as they were. They are seeing opportunities for their children which they never saw for themselves, and the children are seeing upward opportunities of which their parents could not have dreamed.

Education has become both the status symbol and the means of achieving these new aspirations. Education is always associated in the developing society with "getting ahead", of "improving one's lot", of vaulting from traditional to modern ways of living. The status symbol is strongly fixed and the certainty that education is the answer to individual aspirations is strongly believed by both peasant and city dweller. The means for achieving these aspirations will, of course, differ in different segments of the social and economic structure. But the belief and faith in education as the provider of the good life is becoming the common heritage of men everywhere, whatever their social and economic positions.

The Growing Interest in the Economic Returns of Education

There is another reason why educational planning is becoming a compelling necessity . There is a growing recognition that education has economic value. Education may be viewed variously. It may be considered solely as a welfare or social service matter, to be maintained at as low a cost as possible, a part of the social overhead of a modern state. Education may be viewed solely as cultural matter, nice to have, since it makes people civilized, literate, and appreciative of fine values. It may be viewed solely as a consumer item, good for the individual and his needs to make a living, be happy, and enjoy his existence.

Or, education can be viewed in much larger terms, as a dynamic investment in the human resources of the nation. If this view is taken a whole new conception of education opens up, and new possibilities for its use to advance the social, political, and economic goals of the country unfold. Thailand seems to be on the verge of this larger conception of the place of education in broad national policy.

The working paper on "The Economics of Education" should be read in this connection. Set forth in it is the conception of education as a dynamic force in the development of the nation. Education deserves to be placed alongside the nation's other development investments such as roads, dams, power, industry, and agriculture. And the returns upon the education investment rank equal to and frequently higher than, the returns from other areas.

Further, this human investment must be well coordinated with other capital investments. Dams cannot be constructed without engineers to build them, maintain and operate them. Further, the degree to which the power from the dam is utilized in profitable enterprises in agriculture, business and industry depends upon the level of education of the people who use the power. Conversely, the education people have is wasted unless the dam is there, representing itself a development investment. Education investments, like all valued resources, should be planned in order to yield the highest return.

The Scarcity of Development Resources

There is a final reason propelling developing nations toward national planning in education. It is the scarcity of resources in the face of the multiplying demands for development expenditures. Development requires stepped up expenditures on many economic and social fronts. Resources, already scarce, must be spread over many projects and enterprises. This condition will likely prevail for some time to come and must be lived with. Since scarce resources call for wise allocations among new education demands, the situation calls for re-thinking and planning as it has never before.

Here, then, are three forces, briefly described, which make educational planning a prerequisite to total development. The population explosion is accompanied by rising educational expectations among the people. Both factors place heavy burdens upon already overtaxed educational facilities. This heavy burden comes at a time when governments are extending themselves on many fronts in order to stimulate economic development. Clearly these conditions call for new looks, new devices, and new plans.

FOUR WAYS TO REACT TO THE CRISIS IN EDUCATION

We can react to the new educational imperatives in many ways. Here are four reactions briefly described.

First, we can ignore or reject the signs of the times, and continue to deal with the mounting school enrollments in traditional and time-tested ways. Certainly this method may be tempting but such a course is not really possible, except for those who choose to be swept along by the tide of educational events and finally be engulfed by them.

Second, we can think that the answer is to meet the crisis by simply doing more of what we have been doing. More teachers. More buildings. More instructional materials. More money. More of all of these will certainly be helpful and more of all are greatly needed. But more of all in the quantities needed are not likely to be available. The only certainty is more students. Where we depend simply upon more of everything to solve educational problems, we are committing two errors: First, as indicated, more of everything is not likely to be available, and second, simply having more of everything does not alone solve the problems of education. Indeed, it can act to compound problems by fixing inefficiency, poor quality and doubtful educational procedures as a permanent part of the system. Further, such a view ignores the possibilities of re-structuring the educational system in order to make it a dynamic factor in the nation's economic development.

Third, we may try partial measures to meet the educational crisis, develop "way-out" measures, and not squarely confront what needs to be done. World educational experience would indicate that there are no panaceas in education, no short cuts, or easy ways out. Children and young people, in any case, should not be guinea pigs for social experimentation. They represent the nation's finest wealth and they must be regarded as worthy of being educated to the fullest ability of the nation to do so, and as far as their talent can carry them. Educational programs which side-step or ignore this view of education should be submitted to close scrutiny.

Fourth, we can view the critical educational situation for what it is, a crisis combined with a rare opportunity. It is a crisis because if it is not solved the nation's children suffer. It is an opportunity because it presents the chance to make of education a significant agent in the nation's development. The rising aspirations for education should not be regarded as a threat. Thailand is fortunate in having a large portion of its youth wanting to raise themselves through education. These young people are testimony to the high regard in which education is held in Thailand and the success of it. All this is to the nation's credit. These youth represent Thailand's greatest resources for future development.

Such a view calls for a full and honest facing up to the educational problems at hand and determination to turn them to the nation's advantage. Such a view cannot be taken lightly. Such a confrontation of the nation's education crisis calls for long, hard planning and hard decisions. Educational problems are continuing ones, never solved once and for all. Efforts must be continuous. And for those who stay with it, the gains for both the nation's youth and the nation's strength are tremendous.

WHAT NEEDS TO BE DONE

In order to confront the present crisis in the straightforward way described above, four matters should be given high priority. And these four items, taken together, constitute the essence of good planning. First, there should be evolved over the next few years a national policy on the role of education in Thailand's development. Second, there should be created new educational planning machinery for bringing together all those agencies of government which have a concern with education. Third, there should be central planning machinery for integrating educational plans, once developed, into the overall manpower and economic plan. This calls for a central planning agency. Fourth, there must be a strong planning unit within education itself, where rests the actual responsibility for executing educational plans and programs. Let us look at these four needs.

National policy on education and development

The present spirited discussion in Thailand regarding education is a sign of widespread concern for education, its basic purposes, scope, and future shape. This kind of penetrating, and frequently warm, discussion is taking place in many nations around the world. It is a part of the fabric of developing societies and should be regarded for what it is, an even widening participation of people in the social issues of the times. Education should come out the stronger for it.

The time is rapidly passing when only the professionals in any area are to have opinions and judgments about the use and conduct of their professions. The use of atomic energy is a matter of public policy, not a matter alone for the atomic physicist to decide. Public health programs and medicine are the concern of all and not only doctors and laboratory technicians. Similarly, public education is increasingly public business in which an ever enlarging segment of the population will feel called upon to express ideas. The time is probably past when professional domains are only the concern of professionals, particularly in those areas where the public is deeply involved.

We may now be moving into an era which is redefining the role of the professional in those areas where non-professionals are obviously concerned and interested. Earlier the professional was like the shoemaker who could "stick to his last," both making policy for his professional area and executing it. Now the force of circumstances may be changing this to require the professional to lead but with interested others in determining what policy should be.

And the critical area for policy just now is: How are the schools to play their rightful role in the development of human resources for a growing Thailand? The concept that education has a vital role to play in economic and manpower development is relatively new in Thailand. No national policy on the matter has been worked out or its operational implications drawn. Interest is high, however. It would seem appropriate, then, to begin to evolve a specific program for placing education as an investment in the total scheme of development. It would follow that decisions regarding the financing of education could then be made on a basis of education's contribution to the national good, rather than on less tangible evidence.

A national policy should be what the name implies, a policy for the nation's good, developed by those persons whose positions make them responsible for the good of the nation. Specifically, these agencies are, beyond the Ministry of Education and the National Education Council, the Bureau of the Budget, the Ministry of Finance, the National Economic Development Board, the National Research Council, and other concerned governmental units. There needs to be an educational planning organization, reaching out from the Ministry of Education and the National Education Council, which conducts its work at both the working and policy levels. Working staff from these organizations need to function together in developing the data, research, and information needed for good educational planning. Periodically, people at the policy levels should review what is being done at the working level. Let us turn more specifically to the operational aspects of this operation.

Overall Educational Planning Machinery

If national policy on education and development is to evolve, a deliberate effort must be made to formulate it. There should be machinery for bringing representatives of the above groups together on a rather continuing basis for the purpose of exploring the dimensions of problems and providing the kind of data and considerations from which can evolve national policies on education and development suitable to Thailand. Educational priorities can then be suggested and appropriate educational programs drawn. It would be in this planning body where the various considerations relevant to educational planning could be aired and discussed. A few such considerations are: data on the economics of education, enrollment trends, education costs, budget limitations, long-term projections, competing demands, economic and manpower requirements, and educational needs. All these matters can come under continuous study and review when there is appropriate planning machinery available. Out of this process should come a better understanding of the facts involved on all governmental fronts and also a better appreciation of the vital role that education can play in the development of Thailand, as indicated later. This planning machinery should be based in the Ministry of Education where responsibility for operations rests.

Integrating Educational Plans with Overall Economic and Manpower Plans

Educational planning does not take place by itself or for itself alone. Its purpose is to serve the enlarging needs for educated human resources in the nation's economy. Education planning must therefore "fit" into national plans. The central manpower and planning agency of the government has an important part to play, largely in three ways. First, it should sit on the working level education planning body described above. Second, it should, after education plans are fashioned, fit them into the total national plan. Third, it should feed the educational planners data on manpower needs. For this purpose, it should probably have on its staff people who specialize in educational planning problems.

Our progress through these four items has been from the general to the specific, from the need for national policy to the need for a coordinating body to assist the development of such policy, iron out obvious conflicts and determine general guidelines, and the need for machinery to integrate educational plans into the total national plan.

Now, we turn to the place where all the basic planning work must originate, the education sector itself. Our order of discussing these matters might give the impression that good planning starts at the top and goes down. The reverse is more likely true. Good planning must take place at the working levels first, move up and be fitted into overall planning and then return to the working levels for execution.

Planning in the Education Sector

The working paper on education planning spells out in some detail the requirements for good planning within the Ministry of Education and the National Education Council. Here only a few essential highlights will be restated. Planning within the Ministry should be done on a high level, probably in the Office of the Under-Secretary. The Office of educational planning should be set up under a deputy under-secretary who will work closely with the Under-Secretary and the Minister, as well as the Directors-General. Consideration should be given to having the Minister or the Under-Secretary act as Chairman of the planning group, with the deputy under-secretary acting as their representative. On the staff of the planning unit within the Ministry should be persons who are competent in such areas as (1) the economics of education, (2) educational research and statistics, (3) education cost analysis, and (4) the sociology of education. There should be a supporting staff. In addition there should be specialists in this working group from the other agencies of government, as mentioned above.

The purpose of the unit itself is to collect, organize, and prepare data and information in such a way that it will be useful to those in positions of authority and upon whose shoulders final decisions must rest.

After the basic planning decisions are made, the office of educational planning will be responsible for putting the plans in final form for submission to the central planning and manpower authority.

Finally, and in summary, there is no magic in educational planning. Its worth and results will always be dependent upon the intelligence and dedication of people, and their willingness to work together. Good educational planning does provide the opportunity to muster the best knowledge available in the service of the nation's youth and future. For this reason, it is indeed a worthy enterprise of government.

The progress of the thinking within the Ministry of Education about educational planning is very substantial. If present progress continues, much will be accomplished. In view of the support for educational planning within the Ministry, technical assistance given in this area would be a good investment.

CHAPTER VI

GOVERNMENT MANPOWER PLANNING

Development planning is relatively new to Thailand. Prior to 1956, development in the public sector was carried out on an individual project basis with no attempt to integrate them into a development plan. There was a Planning Committee associated with the former National Economic Council -- essentially a screening committee for government capital projects -- but it had no planning function. Late in 1956, the Ministry of Finance created an Economic Survey Group under the leadership of John Loftus, Economic Advisor to the Government, as a preliminary step toward getting on with planned economic development in Thailand. In the summer of 1957, the World Bank, at the request of the Thai Government, sent out an economic survey mission. As a Thai "Executive Committee" was organized to work with the World Bank mission, the interim Economic Survey Group disbanded. The mission, in its published report of 1959 entitled "A Public Development for Thailand," strongly urged the creation of a permanent institutionalized planning office.

Shortly after this recommendation appeared, the government took action by creating the National Economic Development Board in July 1959 which replaced the National Economic Council. Originally, it had an extraordinary super-structure of large boards and committees, which soon proved to be unwieldy, and in the reorganization that followed the administration of it came to rest in a small Executive Committee and a secretariat that was inadequately staffed. Somewhat later, the Thai Technical and Economic Cooperation Office, Central Statistical Office, and the National Income Office were assigned to NEDB under the Secretariat's Office. Several young staff members were sent abroad for training, USOM and Great Britain provided two technical assistants, and an agricultural specialist respectively, while Mr. Loftus became the Senior Economic Advisor in addition to his advisorship to the government.

From its inception the NEDB Planning Office had to work with an inexperienced and insufficient staff, and with a pitifully small amount of factual knowledge. Nevertheless, in four months' time, it did produce a Plan document. The 1961-1966 Development Plan was concerned only with the development of the public sector which was to provide the infrastructural base for the national development of the private sector of the economy in a free enterprise system. To have attempted the integration of the private sector into the Plan would have been very difficult given the small staff and insufficient factual data available at the time. Actually the Plan consists of some 180 economic development projects, that are associated with the originating ministries and governmental agencies. Even as it stands, the Plan suffers from two major deficiencies. No attempt has been made to assess the manpower requirements needed to meet the goals implied in the development plan. The other is the absence of a comprehensive educational development program to meet these requirements.

Apparently, the gap in manpower planning was to be fulfilled by the creation of the National Manpower Board in June 1961. Its stated purpose was to provide machinery for the formulation of policies, projects and implementation procedures designed to secure the fullest possible utilization of the nation's manpower resources in the economic development of the country.

The Board's Manpower Executive Committee was empowered in October 1961, to initiate a thorough study of the manpower situation in Thailand and to report thereon to the Board. The Board received this Introductory Report, and authorized its submission to the Council of Ministers. This report was published in the English version under date of July 30, 1962, and was signed by Nai Nikom Chandravithun, Secretary of the National Manpower Board. The report will bear rereading not only for its recommendations but also for the excellent review of the manpower problems in planning for human resource development.

Apparently, the Board felt its status was not clearly defined and requested legislation to clarify its responsibilities and to center manpower activities, and particularly fact gathering in the Board's office, whose creation formed one of its major recommendations. No decision has yet been made on this request and without budget approval the Secretarial function was temporarily assigned to the Labor Division of the Department of Public Welfare, which thus had to work under considerable hardship and uncertainties.

Mr. A. G. Read, an ILO expert in manpower assessment, helped prepare the Introductory Report, although the primary responsibility seems to have been on the shoulders of Mr. Porn Udompong, acting chief of the Labor Division. In early 1963, Mr. Read made a report to the Government of Thailand on "The Development of a Manpower Assessment Program," and in which the statement (see page 26) is made that the manpower assessment duties assigned to the Labor Division by the Manpower Executive Committee could not be properly performed for the lack of personnel and that other arrangements were suggested. Mr. Read further stated that on September 28, 1962, he went with the acting chief of the Labor Division to a meeting with the Secretary-General of the National Economic Development Board. The urgency of information and data about the manpower demand-supply situation, particularly for use in connection with the planning of developments in the educational field was highlighted in this discussion. Apparently, the NEDB was ready to take on the manpower assessment task, and was informed that the Department of Public Welfare would not stand in the way of transferring its responsibilities to NEDB or other government agencies.

Apparently such a transfer was made and NEDB began to equip itself by sending three officials to the United States for manpower assessment training and requested USOM to provide some experts to assist NEDB in a preliminary assessment of human resources development in Thailand, particularly in reference to educational planning. While the National Manpower Board still functions and does continue to make reports, its activities are severely limited by lack of budget support for its Secretariat. As most of its members are included in a NEDB Manpower Sub-Committee, recommended later in this chapter, it might be appropriate to consider disbanding the Board itself.

About April ~~of 1963~~, a major shift in governmental responsibilities was effected through the creation of a new Ministry of National Development. Among the various governmental units placed in the new ministry was the Thai Technical and Economic Cooperation Office, by far the largest operating unit in NEDB. At the same time, the Central Statistical Office, also in NEDB, was transferred to the Prime Minister's Office, as an independent agency and renamed the Office of National Statistics. The removal of these two units, also removed from NEDB many experienced economists, left NEDB with the Planning Office (including the nucleus of a manpower division), the National Income Office, and a depleted capable staff which needs to be urgently increased.

At this point, we are faced with the same problem that has occupied the attention of the previous missions and technical experts. What is the appropriate governmental machinery to provide for an adequate and continuing assessment of human resource development and particularly how this is to be articulated in the Ministry of Education?

It is our conception that the central planning body should be an agency responsible only for planning activities in the Office of the Prime Minister. It should be essentially a planning, research and analytical group staffed with personnel of high professional competence, with adequate technical support, and having access to all branches of government and the private sector for data and factual information required in the planning process.

The task of the planners will be essentially that of:

a) The formulation and reformulation of the goals of the over-all plan, and their translation into a national economic development plan. This should be done in no less than the following broad areas, 1) aggregatively (over-all), 2) functional sectors of the economy, 3) by regions, 4) by projects and 5) by division between public and private activities.

b) The assessment of the total resources likely to be available for the execution of the plan, detailed by sources and types (domestic, foreign, loans or grant, public and private, etc.).

c) The analysis of the prospective impact upon the economy by virtue of the execution of the plan. This would entail a detailed examination in terms of: export earnings, structure and changes in import demand, price stability, increases in employment, increases in national product and income, increases in tax and other public revenues, increases in private savings available for investment, shortages of key skills and proficiencies, etc.

d) Review and assess the progress of the Plan and to evaluate the results of completed development projects and programs; and

e) Initiating, assisting and cooperating with government and other agencies in carrying out studies, research and analysis in all sectors of the economy (including social) in connection with manpower requirements and other resources in order to make manpower planning and economic development planning more effective.

Of course, a basic consideration is a rigid examination of the public expenditure details for the coming forward years. This would suggest that there would be a continual feed-back of attainments and/or shortfalls so that one could continually add a year or even three years forward each year to incorporate the recorded changes, indicated trends, and recasting of forward goals by ever more solid information.

The derivation of manpower requirements is implicit in all forward economic planning - in fact there can be no serious over-all planning without considering and measuring the manpower skills needed to carry out the plan. Similarly there can be no serious manpower assessment unless there is a frame work of over-all planning. Whether this particular function of planning should be carried out in a separate but closely allied unit within the same agency is not too important for our present argument. One could say, however, that where both the planning function and manpower assessment technique are both relatively new to the assigned staff, there might well be the temporary starting separation in order to give the manpower planning group better opportunity to work with their counterparts (also relatively new) in the cooperating ministries and agencies. Of course, this all supposes the commitment of funds, qualified staff and full time devotion to the specific task assigned.

Actually the work of the manpower planning office would be highly dependent on the data developed by the over-all economic planning office, the Office of National Statistics, the National Income Office, the Bureau of the Budget, the Ministry of Finance and the Department of Public Welfare. The group also will need access to industrial intelligence having to do with the private sector of the economy in terms of anticipated manpower requirements, employment prospects, productivity trends, and the like. In practice then the two planning units are mutually supportive and certainly could be put under the same administrative tent as maturity is achieved in both units. There does not seem to be much debate as to how these units should function internally, the nature of their tasks, and how their recommended plans ultimately are achieved and translated into policy approval. There appears, however, to be apprehension among some Thai officials that any such central planning agency for economic and manpower development would take over some or all of the planning functions of any ministry or agency. This is not the case.

Actually such a central planning agency cannot function properly unless there are officials having planning responsibilities in all of the appropriate ministries and agencies. The functioning of the planning agency depends on accurate data and information flow from these ministries and agencies in order to give reality to the over-all plan and, once national policy has been approved at Cabinet level, to recommend the adjustments required to fit the planned objectives of each governmental segment into the over-all plan. The task here is to see that internal inconsistencies do not result from the segment plans and to suggest possible alternatives if attainment is under some inelastic constraints. In any event, the final approval of any ministerial or agency plan is at Cabinet level and not within the authority of the planning agency.

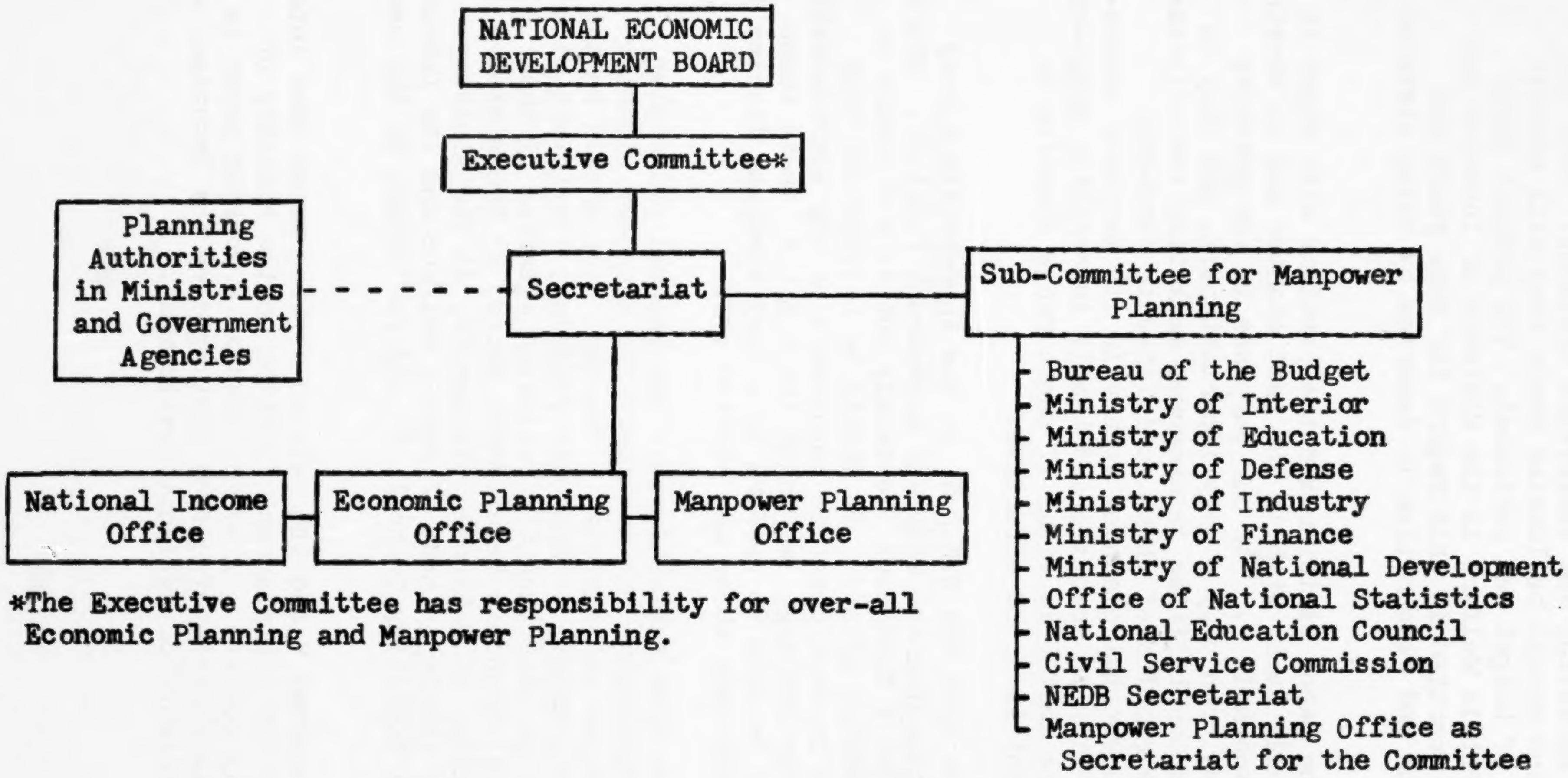
It is obvious therefore that the key to effective planning on the national over-all level -- and ultimately on a regional or area basis -- is the extent to which the ministries and agencies work towards a common goal through the helpful guidance of the over-all economic and manpower planning agency. It must be obvious that any ministry or agency that does not engage in serious planning will have it done for them at the Bureau of the Budget, the planning agency, or by the Office of the Prime Minister. It is hoped, however, that neither the Bureau of the Budget nor the Prime Minister's office would make such decisions without first obtaining the guidance of the planning agency.

To give visual expression to the above concept, we are sketching this out in chart form on the following page.

One should not assume that planning will automatically take place once the structure is settled upon and a competent staff assembled. There must be a positive will to plan and to cooperate in carrying out the tasks at all levels or it will not take place. For technical assistance from abroad to be in a position to be effective the Government must spell out in unequivocal terms what are the precise functions and authority of the central planning agency; the appropriate channels of communications with all other agencies of the government; and the means to command information from the private sector that is vital to the central planning function and its competence in spelling out the Nation's economic and social goals.

One last comment or two should suffice. One of the principal purposes of long-range target setting of economic goals is to ascertain prospective manpower requirements in terms of needed skills far enough in advance to enable the education system to make every possible and reasonable adjustment to meet such projected requirements. It is obvious therefore that some special liaison arrangements might be desirable in order to coordinate planning in the Ministry of Education with that of the National Education Council (speaking for the Universities) and with the Civil Service Commission, and possibly with the Ministry of Industry and Department of Public Welfare in regard to training in industrial activities. Such a cooperative linkage would certainly facilitate the analysis of "education planning" in the central planning agency and in supplying manpower requirement projections to the educational system.

While we have discoursed at length on the long-range aspects of manpower planning one should not assume that we are unmindful of the very important role of manpower planning for the present and immediate future. The efficient utilization of the present labor force is crucial for any


NATIONAL ECONOMIC DEVELOPMENT BOARD
Executive Committee*
Planning Authorities in Ministries and Government Agencies
Secretariat
Sub-Committee for Manpower Planning
Bureau of the Budget
Ministry of Interior
Ministry of Education
Ministry of Defense
Ministry of Industry
Ministry of Finance
Ministry of National Development
Office of National Statistics
National Education Council
Civil Service Commission
NEDB Secretariat
Manpower Planning Office as Secretariat for the Committee
National Income Office
Economic Planning Office
Manpower Planning Office

*The Executive Committee has responsibility for over-all Economic Planning and Manpower Planning.

Note A: It is assumed that the coordinating agency for planning in the several universities would be the National Education Council, which in turn would cooperate with the Ministry of Education in supplying information and in reciprocal treatment. The same would be true of the Civil Service Commission. It would be appropriate for the Ministry of Industry to cooperate with the Ministry of Education on training activities within industry. There are numerous other cross-agency cooperative channels that should be developed so that articulated planning by specialists will be made available to the central planning agency in NEDB. As for a beginning in the acquiring of industrial intelligence, one would suggest that the existing economic information units of the Bank of Thailand would be a natural and first source.

country and particularly so in a dynamic developing one. This aspect is usually treated as labor marketing and in-service training. Both are essentially operational and should be located where they will receive maximum support in terms of budget and personnel. The present Labor Division, Department of Public Welfare in the Ministry of Interior has been valiantly trying to function in this regard for some years and should be given the status and recognition it deserves by being elevated to a Department level.

The activities of the Labor Division and the problems with which it is contending are more fully dealt with in the next chapter and in Working Paper #5 to be found in appendix . For our purposes in the planning function a Labor Department can play a very important part, not only in carrying out its many responsibilities in manpower marketing and utilization, but in relating the results of these activities to feed-back information needed by the central planning agency in its manpower assessment role. A connecting link to accurate and timely information manpower utilization in the private sector is vital if short range planning in human resources development is to be effective.

It would appear to us that the N.E.D.B. is the appropriate agency to carry on the central planning and manpower assessment function. Where else would you perform such a function? Certainly not in a Ministry or other operational governmental agency. It should be responsible only to the Prime Minister and it should not be burdened with any administrative duties except its own house keeping. We think the N.E.D.B. meets these qualifications and should be able to perform in a very adequate fashion if the recommendations we have made above are carried out.

It is obvious that we have sketched above the general principles that should govern in establishing the machinery for manpower planning throughout related ministries and agencies. The next step should be the preparation of detailed statements of Manpower planning, consistent with the adopted framework, by no less than the following agencies of the Government: 1) The National Economic Development Board, 2) The Ministry of Education, 3) The Ministry of National Development, 4) The Ministry of Interior (particularly the Department of Public Welfare and its Labour Division),5) The National Education Council, 6) and for others as the needs may be suggested.

In this connection chapter V and the related working paper goes into considerable detail as to how the planning function in the Ministry of Education would presumably operate. Also included as a working paper is a tentative statement on the planning function envisaged by the Technical and Planning Office of the Ministry of National Development.

CHAPTER VII

MANPOWER UTILIZATION

The market mechanism by which employer and employee make free choices in the utilization of skills and proficiencies is a remarkably effective institution. And, it is so in Thailand, where several indicators suggest the market mechanism is quite healthy: considerable geographical and job mobility exists; if one excludes the family enterprise, there is an absence of job discrimination by sex or race; and unemployment is not too serious a problem at present. These are all signs that automatic functioning of the employment market mechanism does exist. An important policy goal in manpower utilization is precisely that of encouraging the market to work in this fashion. To the degree it does, there is minimum expense to the government and, even more important, there is maximum freedom to the individual.

The market mechanism in theory can operate effectively only if there is adequate and timely information available to employers and to job applicants (or to employees who wish to advance themselves). A proper function of government is thus to assist in disseminating such information. And through the operation of employment exchanges, it can also offer such services as placement and counseling, both of which are needed if the employment market is to function in a satisfactory manner.

Regardless the government of Thailand cannot remain completely aloof from the functioning of the employment market as it is the largest single employer, employing one out of three workers classified by the 1960 census as "employees," (as distinguished from "own account workers" and "unpaid family workers"). And, secondly, the government salary and wage structure (particularly, at lower levels) establishes the basic pattern for wages and wage differentials elsewhere in the economy. Due to this overriding influence in the employment market, policy makers need to study the implications of government wage differentials and of civil service policies in general.

While our terms of reference certainly included a study of the functioning of "labor marketing" in Thailand, time limitations prevented any deep penetration of this area. We did however hold several discussions with the direction and staff of the Labor Division, charged by the government to carry out many operating functions of manpower utilization. It is obvious that the Division, under severe handicaps, has performed very creditably in its field. With an adequate budget and additional staff, buttressed by having its status raised to the governmental level of a department, its work could be immeasurably and effectively expanded. We asked the Labor Division staff to prepare a working paper covering their operations, their own appraisal of the results obtained, and such recommendations as seemed appropriate for our consideration.

This paper will be found in the appendix. Our review of this document suggests the following recommendations in regard to the functioning of the Labor Division:

1. The Labor Bureau should be advanced in status to a Department of Labor. This will give it the recognition and authority to carry out its responsibilities. Further, it will distinguish the several services it performs from public welfare services which, though important, are of a sufficiently different character and objective from labor services as to merit separation.

2. Placement services of the employment service should be extended and upgraded gradually. First steps should be to assist in the placement of vocational school graduates, thus helping to do part of the important job of linking schools better with employing establishments.

3. The Labor Department should help in the encouragement of on-the-job training programs, seeking to find under what circumstances apprenticeship, sandwich, or other adult training arrangements can usefully be put into effect.

4. Finally, the Department of Labor can improve and make more useful its preparation and dissemination of employment information by upgrading certain existing reports, adding information on turnover, etc.

Another facet of manpower utilization is the subject of on-the-job training, though one should not expect wholesale improvements in the proficiencies of the Labor Force from this type of training. This is because only 12 per cent of the 1960 Labor Force were "employees" of either a government organization or a private firm. These people are nonetheless important in the country's economic development; training of them should be encouraged by whatever means. Certainly the government has considerable leverage to apply.

One of the deterrents to a private (or public) organization doing much in the way of training is the possibility that the employees so trained will be hired away, thus preventing the employer who does the training from realizing a return on the training investment. Job turnover figures are almost non-existent in Thailand, but inquiry suggests that employer's are subject to some real vulnerability on this count. A means that has been developed in other countries to bridge this problem is an arrangement whereby the government will share part of the training cost with the employing establishment. This is a recognition that society, as well as the individual employer, benefits from enhanced manpower proficiency.

The problem certainly invites further study and we strongly urge that the government of Thailand investigate the feasibility of partial subsidies or other incentives that would have the effect of spreading the quantity and quality of on-the-job training programs. At least two means of encouragement that appear to have been successfully applied in other countries are the following:

1. An additional requirement for permits of entry of a foreign enterprise or of a joint Thai-foreign enterprise, could be the stipulation that the firm will undertake programs designed for the training of Thai workers (including the inexperienced) to acquire the skills needed for its operations.

2. With regard to training programs that meet approved standards, the government could participate with the employing establishment in the cost of training. Quite often this arrangement is accompanied by a stipulation that for those employees so trained and who remain for a minimum period of time with the firm that undertook the training, the employer will reimburse the government for the latter's share of training cost. This requirement is reasonable since the firm is indeed able to realize the return on its investment in the trainee. Such a refinement as this would no doubt add substantially to the cost of administering a government-supported training program and therefore might be of questionable value in comparison with the simpler matching fund arrangement that does not try to adjust cost in accordance with job longevity of the trainee.

A related arrangement for increasing the proficiencies of some of the labor force is the expansion of adult education of both a vocational and a general education nature. Adult education practices the desirable principle of self-help in the improvement of skills. Courses can be either night school or "sandwich" type. The latter means those in which the employee goes on part-time work status to enable him to spend more intensive time in day school than he would be able to do in a night school. Often this arrangement requires the employer to have two such part-time workers for each position. There are many variants by which the three parties at interest -- employer, employee, and the government agency encouraging the training -- can each share the cost of such "sandwich" training arrangements.

Socio-economic factors play a very important role in allocating manpower in the labor market. Persons educate themselves to earn a living. The extent of their educational motivation is often guided by the rewards that society offers. In Thailand the classification of civil servants is principally based on the attainment of educational levels. The following table reveals the broad structural lines of this educational hierarchy. In 1960 lowest class (4) contained 83.8 per cent of all government employees and only

GENERAL SALARY AND CLASSIFICATION SCHEDULE
OF THE GOVERNMENT OF THAILAND

(including entrance Salaries fixed for degree holders)

*	1960	TOTAL PAY PER MONTH	**
CLASS	Grade	Baht	U.S. Dollar Equiv.
4th 82.8% of all employees	1	450-475-500-525	$22.50 - $26.75
	2	550-575-600-625	27.50 - 31.25
Usually Matayom 6 - (10th yr. school)	3	650-675-700-725	32.50 - 36.25
	Special	750-800-850-900	37.50 - 45.00
Police constables. 90% of school teachers Hard to get promoted to 3rd class (less than 10%)	Note: For 3 yrs. Technical or Commercial course the starting salary is ฿600. per mo.		
3rd - 10.8% of all employees	1	750-800-850-900	$37.50 - $45.00
	2	1000-1050-1100-1200	50.00 - 60.00
Equivalent of Matayom 8 (Equal to about 3 yrs. college)	Note: -For 4 yrs. Thai Univ. starting salary is ฿ 900. per month. -For 4 yrs. Thai Univ. (Honors) starting salary is ฿ 1050 per month. -For 5 yrs. Thai Univ. starting salary is ฿ 1100 per month.		
2nd - 4.9 of all employees	1	1200-1300-1400-1500	$60.00 -$75.00
1st Line Supervisors; Deputy District Officers and many District Officers of small Amphurs	2	1600-1750-1900-2050	80.00 -102.50
	3	2200-2350-2500-2650	110.00 -132.50
	Note: Thai Master's Degree or 3 yrs. U.K. Univ. starts at ฿ 1400. 4 yrs. Foreign Univ. or 3 yrs. U.K. with honors starts at ฿ 1600. U.S. Master's or French Doctorate starts at ฿ 1900. U.S. Ph. D. Degree starts at ฿ 2200.		
1st - 1.1% of all employees	1	2650-2800-3000-3200	$132.50 - $160.00
District Officers; Chiefs of Divisions	2	3600-3800-4000-4300	180.00 - 215.00
Special - 0.4% of all employees	1	4300-4600-4900-5200	$215.00 -$260.00
	2	5700-6200-6700-7200	270.00 - 360.00
Director-Generals; Deputy D-Gs; Agency heads. Top key officials only.	3	7650-8000	382.50 - 400.00

Source: Civil Service Act B.E. 2497, Salary Schedule No. 1; and Regulation Specifying Temporary Extra Salary Increment (No.2) B.E. 2495, as combined in B.E. 2502 (1959). Percentages based on data in Table I.

* About 4% of all employees are non-civil service.

** One baht equals about five cents, U.S. or $1.00 equals about ฿ 20.00

about 10 per cent of those in this lower grade have any chance to move up to the next class (3) where 10.8 per cent of all employees were classified. The number in class (2) is only 4.9 per cent and in classes (1) and special combined 1.5 per cent. A university degree is easily the pass-key to rise above the fourth class and to ensure the possibility of further promotion. The higher the degree attainment the higher one can enter the system. A person with a Ph.D. degree from a U.S. university is enabled to enter at a salary level in class (2) that would take a hardworking individual entering at the bottom of class (4) to reach in some thirty years!

No one would quarrel about giving higher status and pay ratings to persons who advance their educational level. The real problem is that no distinction is made between a university degree obtained in ancient history say and one obtained in nuclear physics or petro-chemistry. The country may not need many persons with the former degree but may need very many more with the science or engineering degree. With the present rigidities built into the civil service classification system Thailand is not adapting motivational patterns consistent with the needs of a developing society. Furthermore the pattern of promotion is solely along administrative lines. Consideration should be given the establishment of another one on career or talent lines. One could almost safely wager that a study of civil service employees in classes (2), (1), and special, would reveal a substantial number that are not working in their area of professional or trained competence. For the high level skills of a country to be ill-used is a waste of the first magnitude.

Even within its own family the government is inconsistent. A cursory review of salary grades in the State Railways and the Yanhee Electricity Authority would indicate that they are 30-35 per cent higher than civil service grades for the same relative grades. When it comes to the private sector the differential in salaries for higher level employees indicate unusually wide margins. Foreign firms, which obviously require bilingual employees, have salary levels that are two to three times that of the comparable civil servant. In fact one can find numerous positions in private firms that pay 22,000 to 26,000 ฿ a month three times the salary of the highest rated civil servant. The problem is very acute in the engineering field, and much concern is felt at Chulalongkorn University where a losing battle is being waged with private industry in trying to retain its engineering staff.

Students going abroad to study under government assistance are presumed to be bonded for government service for twice the number of years they were abroad at government expense. This would appear to be a reasonable restraint yet the government permits these public employees to shorten their bonding period by cash settlements provided by their prospective employers in the private sector. Certainly one should not impede the mobility of employees in and out of public or private employment, but public policy should determine if such cooperation on the part of government is in the public interest.

There is no question but that salary levels in the public sector are too low in terms of attracting and keeping qualified employees. In the teaching realm it is a major factor that will have to be reckoned with if the quality of education is not to suffer further deterioration. Over half of the total number of civil service employees are in the Ministry of Education, and of these a very large percentage are teachers classified in the fourth class with salaries that range from 450 ฿ to 900 ฿ a month. One might note in this connection that the cost of living (1960) for a single person in the Bangkok-Thonburi area is calculated to be about 560 ฿ and that for a family (average 5.8 persons) comes to 3,247 ฿.

Throughout this report we have not had occasion to comment on the role of the military forces in human resources development. For reasons that are readily understood there is a reluctance on the part of the Ministry of Defence to release any information on manpower. Yet this last area in our manpower utilization inquiry looms very large in the training and upgrading of skills necessary to a developing economy, and we briefly touch on some aspects that readily come to mind.

For the raw recruit that is illiterate there must be basic education and training in reading and writing. The operation of the sophisticated weaponry, tracking, and communications systems of a modern military establishment requires highly skilled personnel of advanced specialization. As these persons are mustered out of service they return to civilian life with technical skills of great use to the private and public sector. Many could become excellent teachers in technical and adult training centers.

In the public domain they have acquired skills in public health and sanitation; in transportation and road building; in public administration - particularly in leadership and in disaster relief. They will be very useful in community development activities, having learned to operate spraying and other rodent and insect control devices; in the techniques of simple irrigation, drainage, and flood control systems; in the clearing of areas; in grading; and in the setting up and operation of saw mills.

In the private domain they will have skills needed in radio, television and telephone activities, in construction both building and highway; in the repair, maintenance, and operation of airfields; and in a host of other occupations that require high level vocational skills.

Certainly there would appear to be no reason why studies could not be initiated, under military auspices, to assess the manpower that exists in the armed forces that will have potential use in the public and private sectors. The military has an educational structure of the first order and the training it provides should have reasonable orientation to the ultimate needs of society once the serviceman has finished his military tour of duty.

At this point we terminate our inquiry and review of human resources development on a preliminary assessment basis. In the following chapter attempt is made to spell out our specific recommendations on studies and surveys that should be mounted if planning agencies, central and ministerial, are to function with the needed level of factual data and information.

CHAPTER VIII

RECOMMENDATIONS FOR FURTHER STUDY

In the course of carrying out our mission, the Joint Task Force encountered several gaps in information or analysis, the filling of which would greatly benefit those who will continue to carry out manpower and educational planning in Thailand. The purpose of this chapter is to present these ideas in pretty much the same sequence of subject matter developed in this report. Our purpose here is to attempt comprehensiveness rather than to spell out in detail the specific recommended studies or surveys. For any of the following suggestions that are considered worthy of implementation, the responsible agency will want to outline complete terms of reference and scope.

Our suggestions for further study fall into three groups -- those relating to (A) long-range demand estimates, (B) educational effectiveness, and (C) utilization of existing manpower.

A. Long-Range Demand Estimates. Certain research projects should be carried out to improve the data and judgments that went into the demand estimates of Chapter III. Some of these would be relatively short analyses, others would entail more significant projects, including possibly some surveys. The following are the most essential to be undertaken:

> 1. Manpower Needs, Agriculture and Non-Agriculture. Our estimates for the 1980 Labor Force assume a moderate shift out of agriculture such that the percentage of the Labor Force engaged in agriculture would encompass a decline from 82 per cent in 1960 to 70 per cent in 1980. The expected population increase, however, would more than offset this relative decline with an anticipated absolute increase of about 5 million workers in agriculture between 1960 and 1980.
>
> After having compared the probable educational supply with estimated educational requirements, we conclude that the decline in agriculture from 82 per cent to 70 per cent in twenty years may be a little too large in view of the probable limitations imposed by educational supply. While it was not within the scope of our mission to work out an integrated development plan for 1980, we did review our assumption with several students of Thailand's economy as to other reasons, (other than that of manpower) that could slow down the shift from agriculture. Several complexities would enter a systematic determination of

just what absolute and relative size the agricultural sector really can become in 1980. Involved are considerations of availability of additional irrigated land, double cropping, crop rotation, marginal costs and returns, comparative advantage by crop in international markets, etc. On the positive side, we can say that the growth of non-agricultural sectors to the point where they could absorb 30 per cent of the Labor Force by 1980 would likely require a stock of manpower having the educational attainments indicated in Chapter III. On the other hand, it does appear that as rapid an expansion of secondary school graduates as is called for in that estimate may not be fully feasible for reasons of both educational budget and of teacher supply. If this is so, movement out of agriculture, (where educational attainment needs are modest) can proceed only as fast as the expansion of educational output will permit.

We suggest that this shift out of agriculture, and its manpower and educational implications, be the subject of additional study. Clearly the viability of Thailand's whole economy is heavily dependent upon agriculture. Fortunately, agriculture has been able to serve as an economic residual in the economic development of Thailand, supplying under-employed manpower as non-agricultural growth occurred, and reabsorbing workers whenever urban manpower surpluses developed. Because of a favorable land and climate environment it would appear that there will continue to be considerable resiliency in Thailand's agriculture. Whether the same will be true with an 80% increase in total population by 1980 is a question that deserves careful study from an agricultural economics standpoint as well as from a manpower education standpoint.

2. Case Studies of Demand in Key Occupations. The micro approaches of Chapter III should be supplemented by micro studies of key occupations. The objective would be to take an occupation, for example, agricultural technician, mechanical engineer, or industrial engineer, and to find needs by type of industry, by size of firm, by level of qualification, etc. Salary and wage differentials for experience and proficiencies also should be recorded as well as regional differences. Sample surveys would likely prove adequate for this survey.

3. Educational Attainment by Occupation and Sector. Chapter III's recommended method is quite dependent upon the coefficients that express the per cent of labor force in each sector that attained various educational levels. The census cards should be run by occupation within each economic

sector to see if the intermediate step would add reliability to the estimates. Also, the 1963 Labor Force Survey cards should be analyzed for educational attainment to see if any trends can be detected between the 1960 to 1963 interval.

4. Alternative Population Projections. Population projections should perhaps be made under assumptions other than the decline in fertility rates assumed by Das Gupta, et al. This study assumed a decline from 4.5 per cent to 3.2 per cent in birth rates. If population exceeds the Das Gupta projections, new and increased targets will likely appear for manpower and education planning to meet.

5. Allowances for Outflows from the Labor Force. In revising our estimates for the second printing we incorporated a new demographic estimate of outflows that was substantially lower than the original estimate. Possibly some further inquiry should be made into whether the outflow estimates should be refined to recognize differing survival rates for the populations in each level of educational attainment.

6. Effect of Teacher Requirements. As was indicated in Note No. 1 at the end of Appendix A, we are not satisfied with the effect that heavy teacher demand might have upon the estimated demands for graduates at higher levels of attainment. This is a dynamic, or "feedback", problem that may be sufficiently severe as to require a more complex model to allow for this phenomenon in making estimates of the requirements by educational attainment.

Foreign technical advisors may well be needed to assist the appropriate Thai agencies in carrying out the foregoing studies. An ILO Advisor on manpower assessment will be arriving soon. Provided his experience and training have been along the lines the foregoing inquiries have taken he should be able to provide the needed expertise. If not it may be necessary to supplement his capabilities with needed specialized manpower assistance from abroad.

B. Educational Effectiveness. The need for manpower presents the educational system with an unusual challenge. If the challenge is to be met, actio on a broad front is called for.

Whatever action is taken should be done so only after careful guidelines are laid out. We strongly urge that no major external assistance projects be mounted until careful studies are made about the kinds of action which this preliminary assessment of education and human resource development suggests.

It is our opinion that three major studies be undertaken at an early date in order to provide guidance for implementing the principal recommendations of this report. These may be carried out as a single total study or separately. If the latter course is pursued, coordination of the three should be provided, since their interests overlap. In addition, we have a fourth recommendation concerning technical assistance for the planning efforts within the Ministry of Education.

1. A study of the needs of secondary education in Thailand for the next ten years. This study should be a careful one designed to give guidance on how secondary education can be geared best to meeting economic manpower requirements. The need to restructure secondary education along lines presented in Chapter IV is the single most important conclusion of the Joint Task Force.

2. A study of the needs of universities in Thailand. This study would be the higher education counterpart of the secondary study and its purpose would be the same, except its focus will be at the university education level.

3. A study of teacher education in terms of meeting the manpower requirements. The crucial matter here is the production of sufficient numbers of teachers of good quality. There should, therefore, be a careful study of how this massive undertaking can best be undertaken including the leadership role of Prasarnmitr College and Chulalongkorn University at both undergraduate and graduate levels. Thailand has a good teacher education base on which to build, and research and guidance on the future would be a good investment.

4. A study of the organization and management of the Ministry of Education, the largest civilian unit within the government, employing over half of the civil servants and having the largest ministerial budget.

The findings of the Joint Task Force give every indication of far greater demands on the Ministry to provide more and better education in the immediate future. This and other pressing demands will require a major effort on the part of the Ministry to analyze its organization and management in order to obtain maximum efficiency and economy in its operations. This is a sizable task, necessitating the efforts of the most able staff members, coupled with outside expert assistance. This study should be an on-going process, continually reviewing the modifications and improvements needed to achieving even greater effectiveness. Properly achieved it could be a most significant contribution to meeting the human resource needs of Thailand

All of the foregoing studies are almost certain to require some technical assistance expertise from abroad. We particularly recommend acquiring experts from the United States for the first task, that of studying secondary education, because there is wider experience in the United States than elsewhere in effective patterns of secondary education in the several streams of academic, vocational and general.

In addition to the above high priority studies, the following also give promise of offering greater educational effectiveness in Thailand:

1. In line with the desire of the Ministry to achieve maximum efficiency and economy, two areas of coordination in secondary education merit study and possible experimentation:

a) The reduction of the number of secondary schools in various communities by joining boys' and girls' trade schools, or other combinations such as boys' trades and academic, girls' trades and academic, or all four in one comprehensive high school.

b) The training of academic and shop teachers for the trade, technical and academic schools appears to be another area of where clarity of responsibility is lacking, and confusion exists. This is a responsibility which is jointly shared by Teacher Training, Secondary Education and Vocational Education. Improving the quality of instruction by additional teacher training is most desirable. The three departments might well consider this need together.

c) The move to place elementary schools under the municipalities has created a myriad of problems as yet unresolved. These should have early attention by the proper authorities.

2. In-Service Training of Teachers. It is possible that programmed instruction offers a means of carrying out a part of the big job of upgrading the existing cadre of public school teachers. Some patient research and adaptation would have to precede any large scale application of this idea. However, the potential productivity and economy of the method are so attractive that inquiry seems justified.

Programmed Instruction has been publicized most around the term "teaching machine." Actually no machine or device is needed, since there are low cost means of publishing programs, for example by a "scrambled book." We would anticipate that the non-machine type would be adequate for this possible application to in-service teacher education.

Programmed Instruction has been found most useful in the relatively routine aspects of instruction. In this recommendation, we suggest that parts of the instruction necessary to bring primary teachers up to a given level of teaching could be programmed and tested. If found to be effective, the programs could be published and disseminated throughout the country, particularly in rural areas where it is hard for teachers to attend teacher institutes. Successful completion of such a program should result in the teachers advancing a step or two on the salary scale. This method of self-instruction might speed up the improvement of the less qualified teachers throughout the whole Kingdom.

No doubt a pilot project of research and testing of programs would be needed to implement this concept. Foreign technical assistance would probably also be essential.

3. Improving Linkages Between Vocational Schools and Employers

A key, but often neglected, element in making a system of vocational education effective is linkage between school and employer. Across this link must flow information in both directions. From the employing establishment must come information on the skills that are needed and to what levels of proficiency, using what tools or equipment and job descriptions. From the schools must come the outlook for supply of graduates and their proficiencies, assistance in placement, and counseling. These links are often partially covered by advisory councils to vocational schools or institutes. But only when such councils are supplemented by a missionary spirit by the school director, or his placement officer, does the vocational school articulate well with the economy it is designed to serve.

We have not had time for a systematic review of how well this machinery functions in Thailand. A few interviews with those connected with vocational education suggest, however, that effective linkages do exist in isolated cases but that they are the exceptions rather than the rule. Indeed it does not appear that this function is recognized as a necessary operating principle in management of vocational schools. It was not rated high in priority in any of the discussions we had with administrators of vocational schools. Perhaps the aggressive initiative on the part of school officials to forge such linkages is contrary to Thai values or customs. But we know of no really successful vocational school system anywhere unless this sort of communication and feedback exists.

The purpose of this research project would, therefore, be to see how such machinery might be adapted to the Thai situation. The project should also cover the investigation of whether serious obstacles prevent such arrangements from being made. Finally it would have the objective of outlining the way to implement such a system, including areas of responsibility both in the school and in the Ministry of Education. If outside technical assistance seems essential, we would so recommend.

4. Adult Education. This important aspect of education in Thailand appears somewhat neglected. Adult (young and old) literacy and basic cultural and civic education could be expanded substantially through the fuller use of existing facilities and staff. The Mobile Vocational Unit, so successfully used in South Thailand, offers great promise for short-term vocational training, and merits early and extensive development for many other rural areas. Some experimentation also might be undertaken along the lines of the Danish "Folk School."

5. Selectivity in Thai Students Studying Abroad. An appendix presents some information on the distribution of Thai students studying abroad by course of study. In addition to the suggestion made there, we believe that the Thai Government should give consideration to establishment of priorities and quotas of such students for each main area of curricula in order that preference would be established for students to pursue educational careers that are sorely needed for the nation's development needs. They should also be bonded to work for the government for not less than 5 years on their return.

If at all feasible, some similar control might be considered over students going abroad at their own expense. After all, they do require foreign exchange and while this situation is of no immediate concern to the country, this reserve is too precious to be used in ways that do not bring the highest returns to Thailand's development. In any event, ways should be explored to determine how it might be possible to channel these students into educational careers more aligned with the country needs in high level skills.

Of course, on the domestic front considerable could be done in the preferential granting of scholarships on some quota basis that would accomplish the same results as sought after in the above paragraphs. Here too the students should be bonded to the government for some appropriate number of years of service.

6. Reform of Civil Service Rules for Teachers. It is likely that some thorough going overhauling ought to be done on the civil service rules particularly as applied to teachers. This

should include a requirement that all underqualified teachers should have limited tenure until they have attained the appropriate standards established for qualified teachers. After all, over half of all civil service employees are in the Ministry of Education and some possibilities must exist to use this machinery to raise the salaries of teachers on a basis of quality attainment.

7. Economics of Education. In an appendix we treat some of the theory and possible applications of the economics of education. We urge that the Ministry of Education test the application of these concepts to some of the inquiries mentioned therein and to many others that can be suggested.

8. Improvements in Educational Financial Data. In an appendix we present a number of suggestions for improving the reliability and usefulness of cost information in public education. A careful effort to improve cost accounting must be undertaken if the planning of educational investments will be effective and flexible.

We have noted the high cost of elementary education in the present four year compulsory program. Based upon our manpower demand and supply findings, and particularly the pressing needs in secondary and higher education, we have grave reservations about any precipitous action in implementing the Karachi Plan goal. Gradualism is certainly to be stressed here with priority certainly directed towards eradicating the weaknesses now existing in the first four elementary grades.

C. Utilizing Existing Manpower. In the preceding Chapter (VII) we have dealt with some of the means of improving the utilization of existing manpower. In addition to the suggestions offered there we recommend the following studies, the results of which might well contribute to further improved manpower utilization:

1. Regional Patterns of Employment and Underemployment. One of the ways to improve utilization of existing manpower is to equalize shortages in one region against surpluses in another. The Government of Thailand is undertaking to improve regional imbalances by concentrating certain development efforts in the Northeast. It is important that the regional distribution of patterns of employment and underemployment be better understood. A modest amount of intra and inter-regional migration now occurs. The 1960 census showed that 9.8 per cent of people were living in a Changwad other than the one in which they were born. Yet the migratory flows that now occur are being made by people who have relatively

little job information. They may or may not be equalizing the larger employment market in their own and the country's interests.

Recently development economists have greatly improved the techniques for measuring underemployment in agriculture. These methods reveal the amounts of "seasonal", "disguised removable" and "disguised fractional" underemployment. Once the size and timing of this underemployment is known, surveys could be made to ascertain where in other regions opportunities for part-time work or work of a complimentary seasonal shortage is available. However, the number of Northeast farmers who migrate as far as southern Thailand and back suggests that there are indeed opportunities of this kind. It is also possible that planned community and rural development projects could be timed so as to use such labor where it normally lives. The commitment of the labor force to permanent transfer to industry is also involved in any such research project. No doubt technical assistance would be required.

2. Incentive in Manpower Allocation. We believe it would be useful to increase understanding of the socio-economic factors that seem to operate in the employment choices that high and middle manpower make in Thailand. Our report has called attention to some general observation on the wage and salary differentials that apply to the civil servant, the employees of state enterprises and in the private sector. The allocation and self allocation of talent in a relatively free employment market is quite a subtle phenomenon. Choices are effected not only by monetary factors but also by prestige and status, by perceptions (real or imagined) of security, etc. Some penetrating socio-economic techniques and creativity would be required to study these issues.

The results of the study might be of assistance in revising government salary structures which appears to need considerable overhauling. They might also clarify what will be required to attract more appropriate talent into certain educational tracks and into positions particularly important to the country's development. A current motivational study now being made among the faculty at Chulalongkorn University may offer some useful insights in designing the larger survey recommended above.

3. Civil Service Incentives for Critical Manpower. There are many ways that manpower skills now in existence could be channeled into occupations where these skills can be

utilized to the fullest. One such possibility is readily suggested by virtue of changes in the Civil Service rules that would permit salary and grade promotions for scientists and engineers (possibly others) outside the administrative hierarchy that now governs promotions. This could also be coupled with instituting higher starting salaries and grade levels for those having wanted degrees and who will be working in their talent area in government service. This would likely call for a thorough going study of the Civil Service for it is obvious that starting salaries and grade levels are now too tightly linked to the number of years of schooling attained without any reference to the actual skills developed or whether the educational attainment level reached is of minimal quality in terms of the country's manpower skill needs.

In accordance with our instructions we have studied and reviewed in detail the development of the economic manpower requirements with particular reference to the ability of Thailand's education system to respond thereto. Beginning with Chapter IV our recommendations appear in every chapter. Most of these are restated and reenforced in different ways throughout this chapter VIII, and it would be redundant to again go over the list. It might not be amiss however to suggest a very careful study of the contents of chapters IV, V and VI.

The development of human resources in Thailand is not likely to come about in a balanced manner unless it is planned. This cannot be done unless an effective central economic and manpower planning agency functions in full bloom. This maturity at the center cannot be achieved unless there are functioning planning units in the appropriate Ministries and other Governmental Agencies. This is a task for first-rate minds, and such resources in government already seem to be heavily burdened down. Nonetheless the place to start is in procuring funds and additional personnel to provide an adequately staffed NEDB; bring into being the proposed planning office in the Ministry of Education; in the Ministry of National Development, and, to strengthen the present Labor Division by its elevation to departmental level.

The Ministry of Education should proceed with all speed with a comprehensive study of the secondary school level in order that solid guidelines may be established for its development over at least the next ten years.

Finally it is our earnest hope that the labor envolved in this assessment will bear fruit in the recommendations that will be ultimately proposed to the Council of Ministers for policy decision and action.

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PRELIMINARY ASSESSMENT
OF
EDUCATION AND HUMAN RESOURCES
IN THAILAND

VOLUME II
WORKING PAPERS

PREPARED FOR THE JOINT THAI-USOM HUMAN RESOURCES STUDY

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PART 1

WORKING PAPERS ON MANPOWER

A

Demand for Graduates 1960-1966 and 1960-1980

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ON MANPOWER AND
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APPENDIX A

THE DEMAND FOR GRADUATES

1960 - 1966
1960 - 1980

INTRODUCTION

1. The purpose of this appendix is to present estimates of Thailand's demand for manpower for the periods ending 1966 and 1980.

2. The year 1966 was chosen because it is the end of the current six-year plan, and is the farthest year for which economic projections by sector exist. 1980 was chosen because it is the final year of a careful estimate of Thailand's future population and Labor Force. The methods we used give requirements for graduates at each educational level over six and twenty year intervals ending 1966 and 1980, respectively. The simple annual averages are accordingly the demands that correspond to the mid years in the intervals, or 1963 and 1970, respectively.

3. Two general principles were followed in this work. First, a number of different approaches to the same problem were used. Each approach by itself may give a poor picture of educational needs. But, taken together, a more comprehensive consistent and reliable view may be obtained. Second, since the whole concept of "demand" is fairly arbitrary, and since the ability to satisfy demand has not yet been studied, we have presented estimates based upon different assumptions about up-grading of the education level of the population. Some are clearly too low; others probably too high. As more evidence comes in, those who continue this planning should be able to specify more realistic assumptions to improve the demand estimates.

4. For both theoretical and empirical reasons the reader is cautioned not to place too much reliance on the demand estimates. It would carry us too far afield to list all of the qualifications which should be attached to these figures. On the more general level the interested reader should refer to theoretical discussions by Stigler and others on how appropriately to determine whether or not there is a "shortage" of trained personnel in a particular occupation. On the more specific level we shall point out qualifications as we proceed. The best we can say for our procedures is that no unnecessary shortcuts have been taken. In another place in this report we will suggest some lines of data collection and analysis that, once available, will permit more accurate estimation of demand in the future.

5. Most of our estimates are presented in terms of the total numbers of graduates required from the following educational levels: University, 12th grade, 7th grade, and 4th grade. Some readers will ask if the type of curricula and the content and quality of education are not more important than level. They are important. And as will be shown elsewhere, we do have some indicators to suggest the types of educational preparation that will be in demand in Thailand's future economy. But in the next few paragraphs we should like to establish why educational level is so important.

6. Educational level has been found by economists universally to be related to individual and national economic ability. There is a strong positive correlation between individual earnings and educational attainment. Thailand is no exception. The Household Expenditure Survey, just published, shows the following :

Formal Education of head of household	Average Monthly Income (Bahts).
No formal education	1,197
Primary Grade 4 or less	1,105
Secondary Grade 1 through 6	1,921
Pre-University grades 1 or 2) or some university)	3,129
University degree	5,582

7. Educational attainment is equally significant to the national economy. We will not take the time here to cite the many proofs. Harbison, among many others, shows that the greater the educational attainment of the nation's stock of manpower, the higher the per capita income.

8. Another reason for depending upon "level" for measurement is that the content, quality, and curricula emphasis of any educational system constantly changes in response to the needs of the society. Thus, 12 years of schooling today are different from 12 years two decades ago. Thailand's educational system is probably not as responsive in this respect as the country's leaders want it to be. The Joint Task Force, in other parts of this report have some suggestions for such improvement.

9. A final reason for concentrating first on "level" is that relatively accurate data are readily available from the Census. Measurement of qualitative factors is much more difficult.

TABLE I

Average Annual* Demand for Graduates Under Alternative Assumptions, 1963 & 1970

Table No.	Type & Assumption of Estimate	1960 - 1966				1960 - 1980			
		Univ. Grads	12 gr. Grads	7 gr. Grads	4 gr. Grads	Univ. Grads	12 gr. Grads	7 gr. Grads	4 gr. Grads
	DEMOGRAPHIC DEMAND:								
A-1	Enrollment Ratio Constant	2,600	20,000	113,700	668,000	3,000	29,000	143,000	819,000
A-2a	Educ. Attainment Levels Constant	1,348	7,328	49,274	432,933	1,370	7,449	50,088	440,087
A-2b	Educ. Attainment Levels Upgraded. (Whole Kingdom to B-T 1960)	-	-	-	-	20,435	76,269	250,813	557,887
A-3a	7 Years Compulsory Education Achieved 1980	2,600	20,000	117,000	668,000	(3,500)	(44,000)	298,400	842,700
A-3b	7 " " Achieved 1970	2,600	20,000	117,000	668,000	(3,500)	(49,000)	429,600	842,700
	ECONOMIC OCCUPATIONAL DEMAND:								
B-1	Occupational Shifts, 1960 Ed. Attainments	-	-	-	-	2,983	38,304	102,367	Not cal
B-2	Occupational Shifts, Upgrading	-	-	-	-	4,973	59,861	201,636	Not cal
	ECONOMIC SECTOR DEMAND:								
C-1	Economic Sector Trends, 1960 Educational Attainments	1,248	32,182	154,141	621,707	-	-	-	
C-2	Economic Sector Trends, Upgrading	1,957	39,238	116,345	877,002	-	-	-	
D-1	OCCUPATIONAL DEMAND IN SELECTED SECTORS	2,567	10,677**						

*Total additions to the stocks of graduates were calculated for the six years ending 1966 and for the twenty years ending 1980. The annual figures, therefore, apply approximately the mid years of 1963 and 1970, respectively.

( ) Assumes same % graduates from lower level go on to next levels as in 1960

**Of which about 6,000 could have had vocational training.

Summary of Methods

10. The various methods used fall into four groups. Group A relies upon projections of demographic trends, in general asking, what will be the need for education if account is taken only of the expected population expansion? Group B takes into account expected shifts in the labor force among occupations, as well as demographic trends. Group C starts from expected changes in the level of output in different economic sectors, estimates manpower needs for each sector and then the educational implications of these manpower requirements. Group D is an even more detailed economic-occupational estimate for only a portion of the economy. But through it we can establish partial demand for certain high and middle level manpower at University and secondary levels.

11. Within each group we have generally provided at least two estimates. One assumes that the future educational attainment levels, of whatever category is being studied, are the same as existed in 1960; the other assumes that some up-grading of educational attainment levels is required because of increased numbers and changed composition. In our opinion, demand estimates made under Groups C and D, which rely upon economic trends, are likely to prove the most reliable.

Results

12. Table I summarizes the results of the several estimates. It is expressed in terms of average annual demand for graduates of the various educational levels shown. Exactly how many graduates are produced each year during the periods is unimportant so long as the average number per year corresponds to the figure given. Realistically, since it takes time to increase the number of graduates per year, fewer than the required number are likely to be graduated in early years and more during later. As a first approximation, then, the average figures may be ascribed to the midyears of the interval. It would be fairly easy to distribute the total amount to each year in the six or twenty year intervals, if that is needed.

13. With the foregoing and other cautions we shall now point out some inferences. Many more conclusions can be drawn when demand and supply estimates are compared.

14. The demographic demand estimate attempts to answer the following questions (A-1 and A-2) What average annual outputs must occur if Thailand wants to keep pace with population increases by continuing to enroll or graduate the same fractions of people, from the various levels of education? In A-2b, what average annual output must occur if Thailand not only keeps pace with population increases but by 1980 raises the educational attainments of the whole Kingdom to the levels attained in Bangkok-Thonburi in 1960?

15. The demand estimates for constant enrollment are substantially higher than for constant attainment because the latter are influenced by the attainments of population of all ages. Many older people have less education than they would be getting under today's enrollment policies. Therefore, the difference between A-1 and A-2a expresses the degree to which Thailand is already upgrading its stock of manpower over the attainments of the present generation.

16. A-3a and b seek to answer the question: What average annual output must occur if Thailand is to meet the policy which calls for 7 years compulsory education by 1970 or 1980? This policy is, of course, aimed at primary education, but we have made one interpretation of the possible effect of that policy upon secondary and university levels. The assumption we made is that student retention rates into higher grades would persist. For the 1970 estimate this assumption has the effect of sharply increasing the output at 12th grade from 29,000 under constant enrollment to 44,000 or 49,000. Other assumptions could, of course, be made. If, for example, the retention rate were sharply reduced, there would be heavy social pressure for entry by students and their parents.

17. It is clear by comparing the several 1980 demand estimates, that the assumption of upgrading (A-2b) would require a several-fold expansion of education at all upper levels of education over that required just to keep pace with 1960 attainments. No doubt some continued upgrading is desirable and perhaps necessary to sustain per capita economic growth.

18. The 1980 estimates labeled "Economic-Occupational Demand" attempt to answer the following questions: (B-1) What average annual output must occur to respond to the probable future occupational distribution of the labor force, if educational attainments remain constant? B-2 asks the same question under conditions of upgrading attainments. The upgrading assumption is that the fraction of the population having completed each level of education shall increase 2% per year. As is mentioned in paragraph 15, above, a good deal of upgrading has been occurring as the educational system has expanded faster than population growth. Some upgrading is no doubt essential if Thailand is to meet its economic growth objectives of continued increases in per capita productivity. Economists are finding that investments in education account for important shares of productivity increases. Accordingly we selected 2% per year upgrading of educational attainments as the contribution that added "human capital" would make to an overall required increase in productivity of 3 to 4% per year. The results of the B-2 estimate for upgraded educational attainments show that substantially more graduates will be required, not only because of the upgrading assumption but also because of the shifts in occupational composition that will occur between now and 1980.

19. The most detailed analysis went into the 1966 estimates to meet economic sector demands. Estimate C-1 answers the question: What average output must occur if Thailand is to employ a labor force in 1966 as well educated in each economic sector as the corresponding sector labor force was in 1960? Estimate C-2 answers the question: What average annual output must occur if the fractions of the labor force attaining various educational levels is upgraded 2 per cent per year? This upgrading assumption was selected for the reasons outlined in paragraph 18, above.

20. In comparing the economic demands obtained from C-1 and C-2 with those obtained from demographic demand (A-2a), one can see that the economic sector demands sharply increase the requirements for graduates of secondary level, including vocational. This shift is not unexpected. The economy of Thailand is changing in composition, and in the process is giving more prominence to those sectors which depend upon people with a secondary education.

21. Estimate D-1 answers the question: What average annual output must occur to meet high and middle level manpower needs of certain occupations in selected sectors of the economy? Unlike other estimates we made, this one did not include requirements of the entire country. Instead, detailed data were available only for manufacturing, trade and finance, transportation and communication, power and services (private and public). These permitted a fairly precise estimate of the added employment 1960 to 1966 that can be expected by occupation in those sectors. The included sectors are expected to account for 57 per cent of gross domestic product in 1966. National totals could not, however, be estimated by expanding the partial demand shown, principally because such excluded sectors as agriculture have quite different manpower requirements.

22. The D-1 estimates are built up by occupation. This gives an opportunity to estimate high and middle level training needs. Of middle level, we estimate that some 6,000 of the 9411 secondary graduates required per year will become employed in jobs that might benefit from vocational school training.

23. It is recognized that the midyear in the six year plan 1960-1966 has already arrived. Thus demand estimates for 1963 allow no planning lead time. We incorporated estimates for this early period mainly as a means of comparing requirements with what is already occurring in the economy and in the educational system. The results are thus intended to see if the present output of graduates is keeping pace with current needs.

24. We shall now describe each of the estimates in somewhat more detail, presenting the tables by which estimates were derived.

DEMOGRAPHIC DEMAND

25. Enrollment Ratio Constant. The first method for projecting educational demand assumes that the fraction currently enrolled in school in each age bracket remains the same in the future. Since the population is growing at a rapid rate, even this assumption might be expected to require some expansion of the educational system. But this projection makes no allowances for structural changes in the economy or for changing social demands.

26. Populations projections for this as well as the other approaches presented below are based upon a paper entitled "Population Perspectives of Thailand" by Ajit Das Gupta, et. al (Bangkok; January, 1963, mimeographed). This is a careful, scholarly study, certainly the best available. However, the projections may err on the low side, since a one-third drop in the birth rate is assumed by 1980. Other assumptions ignored for the moment, the fact that we have in one way or another relied upon the Das Gupta projections may make our estimates of educational demand too conservative.

27. Constant Attainment Fractions. (See Table A-2). A similar minimal estimation procedure is to assume that the percentage of persons with different levels of educational achievement in the present population - actually obtained from the 1960 census - stays constant in the future. According to this method, the stock of educated manpower is permitted to grow in proportion to population growth, but no faster. If the age composition of the population were constant over time, if enrollment policies did not change, and if the data used for both calculations were completely consistent, methods 1. and 2.(a) would give the same results.

28. The method used in these estimates gives the stock of educated manpower at some future date. The difference between this stock and the present stock is the amount of manpower with certain attainment levels that must be added in order to "stay even" with population growth. But to add this much to the stock, the education system must graduate a sufficient number more than this number of students to account for deaths and net emigration.

29. In our calculations net emigration, which is quite small, was ignored. Outflows are simply the deaths of those in the population 11 years and over during the six year interval. The deaths for 1960 to 1966 were estimated at 909,000. This is 5.264% of the population 11 years and over in 1960. The corresponding number of deaths for 1960-

TABLE A-2 DEMOGRAPHIC DEMAND

Educational Attainment Levels, Constant and Upgraded

	1	2	3	4	5	6	7	8	9
	Total	% with Univ. Degree	University Stock (1x2)	% with 12 grade	12 grade stock (1x4)	% with 7 grade	7 grade stock (1x6)	% with 4 grade	4 grade stock (1x8)
a. (1966), with 1960 Educational Attainment									
1. 1966 Population (11 years and over)	21,410,000	.16	34,256	.87	186,267	5.85	1,252,485	51.4	11,004,740
2. 1960 Population (11 years and over)	17,265,117	.16	27,624	.87	150,206	5.85	1,010,009	51.4	8,874,270
3. Net additions 1960-1966 (1-2)	-	-	6,632	-	36,061	-	242,476	-	2,130,470
4. Outflows (5.264% of line 2)	-	-	1,454	-	7,907	-	53,167	-	467,142
5. Gross additions (3 4)	-	-	8,086	-	43,968	-	295,643	-	2,597,612
6. Average (1963) Annual Demand (line 5 6 years)	-	-	1,348	-	7,328	-	49,274	-	432,935
a. (1980), with 1960 Educational Attainment									
1. 1980 Population (11 years and over)	31,000,000	.16	49,600	.87	269,700	5.85	1,813,500	51.4	15,934,000
2. 1960 Population, 11 years and over (same as line 2)	17,265,117	.16	27,624	.87	150,206	5.85	1,010,009	51.4	8,874,270
3. Net additions 1960-1980 (1-2)	-	-	21,976	-	119,494	-	803,491	-	7,059,730
4. Outflows (19.63% of line 2)	-	-	5,423	-	29,485	-	198,265	-	1,742,019
5. Gross additions (3 4)	-	-	27,399	-	148,979	-	1,001,756	-	8,801,749
6. Average (1970) Annual Demand (line 5 20 years)	-	-	1,370	-	7,449	-	50,088	-	440,087
b. (1980), with 1960 Bangkok-Thonburi Education Attainment									
1. 1980 Population (11 years and over)	31,000,000	1.39	430,900	5.31	1,646,100	18.80	5,828,000	59.0	18,290,000
2. 1960 Population, 11 years and over (same as line a.2)	17,265,117	.16	27,624	.87	150,206	5.85	1,010,009	51.4	8,874,270
3. Net additions 1960-1980 (1-2)	-	-	403,276	-	1,495,894	-	4,817,991	-	9,415,730
4. Outflows (19.63% of line 2)	-	-	5,423	-	29,485	-	198,265	-	1,742,019
5. Gross additions (3 4)	-	-	408,699	-	1,525,379	-	5,016,256	-	11,157,749
6. Average (1970) Annual Demand (line 5 20 years)	-	-	20,435	-	76,269	-	250,813	-	557,887

1980 is 3,389,000, or 19.63% of the population 11 years and over. Applying these percentages to the stocks of each educational level gives the number of additional graduates that would be needed to replace deaths.

30. If additional demographic data become available, it might be worthwhile to apply separate outflow coefficients to the stocks in each educational level. This is on the assumption that life expectancy may be higher for those with higher educational attainments. It is not likely that such variation with educational level is sufficiently pronounced to affect the results significantly.

31. Attainment Up-graded to 1960 Bangkok-Thonburi average. So far, we have assumed that, in one sense or another, the education system merely keeps up with population growth. Now, we explore a way in which the educational attainment levels of the population might be improved. We are not suggesting that the one we present be adopted; a number of different alternatives should be studied.

32. The level of improvement we examined assumes that educational attainment levels for all regions would be equalized at the highest level existing in the Kingdom in 1960. The procedure can be followed by studying the second half of Table A-2.

33. 7-Year Compulsory Education. For comparison with other demand estimates a quantification of the current educational policy is entered in lines A-3a and b. While the fractions of population expected to have secondary and higher attainment have not been officially specified, we estimated them as described in paragraph 17. These requirements are higher than other estimates. They may be thought of as a social demand. Economic activity is, of course, improved by a better base of primary education. But if a sufficiently large number of primary graduates are available and qualified for entrance into secondary levels, the direct economic needs are largely satisfied.

ECONOMIC OCCUPATIONAL DEMAND

34. A second general method for obtaining an estimate of the educational requirements would be to superimpose on the demographic trends a shift in occupational distribution. Educational levels required by various occupations differ substantially. Since economic development generally brings about a shift towards those occupations requiring a higher level of attainments, an additional requirement is placed upon the education system by taking into account changes in occupational structure. Since occupational distributions cannot change much with a three-year period, estimates using this method were made only for 1980.

35. Educational Attainment by Occupation Constant - 10 per cent Shift out of Agriculture. Actually no indication of educational requirements by occupation is available for Thailand. Information on educational attainments by occupation is available for municipalities, from special census runs, and this data formed the basis of the estimates made in this section. Some upgrading of the labor force is implied by this method, since educational attainments for the municipal labor force were applied to the whole Kingdom.

36. The specific procedure applied here is to assume that the per cent of people in different occupations who have various levels of educational attainment remains constant at the 1960 (metropolitan) level, but to permit the labor force in agriculture to drop from 82% to 70% in two decades and a further shift within the non-agricultural occupations. The economically non-active population is assumed to require the same attainment levels as the average levels achieved by the economically active population after the shift.

37. Table II presents histories of nine countries in their developmental periods, showing the trends in percentage of labor force in agriculture. As can be seen, the percentage decline per decade seems to average between 5 and 7 per cent.

38. To obtain occupational shifts within the non-agricultural sector, we used a modified trend projection method, relying to a large extent upon judgment.

39. The detailed procedure used is very similar to that used above, and can be followed by referring to Table B-1. On the basis of the assumption that the economically non-active population will receive the same training as the average levels attained by the economically active population, we made no change in our procedure for estimating required educational output figures.

40. B-2 1960-1980 Demand, Upgraded Estimate. It is reasonable to expect a higher educational attainment in the future labor force than that held in the past, as was described above in paragraph 18. Estimate B-2 assumes the same labor force and shift out of agriculture of Estimate B-1, but assumes also an upgrading of educational attainments by 2% per year.

TABLE II

Labor Force
% in Agriculture

(Source ILO "Empl. Objectives & Policies," 1963)

Country	Year	% in Agric	% Change Decade
Bulgaria	1935	80	
	47	76	10
	56	65	
Hungary	1949	55	
	60	40	14
Italy	1921	56	5
	31	51	
	36	48	5
	51	42	
	54	41	14
	61	28	
Japan	1880	82	
	90	76	6
	1900	70	6
	10	63	7
	20	55	8
	30	50	5
	40	45	5
	51	46	13
	61	33	
Mexico	1930	73	
	40	67	6
	50	61	6
Poland	1931	71	
	50	58	7
	60	48	10
U.A.R.	1937	71	
	47	64	7
	57	58	6
	60	58	
U.S.A.	1880	50	
	90	43	7
	1900	38	5
	10	32	6
	20	28	4
	30	23	5
	40	19	4
	50	13	
U.S.S.R.	1928	80	
	37	56	24
	55	43	
	59	40	
	61	37	10
Thailand	1947	85	
	57	82	
	63	81	
	1980	70	6

TABLE B-1

ECONOMIC OCCUPATIONAL DEMAND

1960-1980 Demand for Graduates, by Educational Level

Minimum Estimate

	1	2	3	4	5	6	7
Line	Total	% with Univ. Degree	Univ. Stock (1 x 2)	% with 12 grade	12 grade Stock (1 x 4)	% with 7 grade	7 grade Stock (1 x 6)
1. Agriculture, Forestry, Hunting and Fishing	16,590,000	0.01	1,659	0.54	89,586	6.00	995,400
2. Non-Agriculture: Professional, Technical & related workers	568,800	6.05	34,412	53.00	301,464	77,00	437,976
3. " : Admin., Exec. & Managerial workers	85,320	4.65	3,967	46.00	39,247	64.00	54,605
4. " : Clerical workers	511,920	2.33	11,928	28.00	143,338	68.00	348,106
5. " : Sales workers	2,033,460	0.10	2,033	1.70	34,569	13.50	274,517
6. " : Miners, quarrymen & related workers	85,320	0.112	96	7.40	6,314	23.50	20,050
7. " : Workers in Transport & Communication occupation	426,600	0.19	811	2.00	8,532	17.00	72,522
8. " : Craftsmen, Production workers	2,403,180	0.225	5,407	1.30	31,241	9.00	126,286
9. " : Service, Sport & Recreation workers	782,100	0.235	1,838	2.00	15,642	9.00	70,389
10. " : N.E.C. workers	213,300	0.112	239	2.80	5,972	25.00	53,325
11. Non-Agriculture Labor Force (2 thru 10)	7,110,000	-	60,731	-	586,319	-	1,457,776
12. 1980 Labor Force (1 + 11)	23,700,000	0.263	62,390	2.85	675,905	10.35	2,453,176
13. 1960 Labor Force	13,836,984	0.16	22,139	0.87	120,382	5.85	809,464
14. Net Additions 1960-1980 (12 - 13)	-	-	40,251	-	555,523	-	1,643,712
15. 1960 Population (11 years and over)	17,265,117	0.16	27,624	0.87	150,206	5.85	1,010,009
16. 1980 Non-Econ. Active (11 years and over)	7,400,000	0.263	19,462	2.85	210,900	10.35	765,900
17. 1960 Non-Econ. Active (11 years and over)	3,428,133	0.16	5,485	0.87	29,825	5.85	200,546
18. Net Additions Non-Econ. Active 1960-1980 (16-17)	-	-	13,977	-	181,075	-	565,354
19. Outflows, 11 years and over (19.63% of line 15)	-	-	5,423	-	29,485	-	198,265
20. Demand 1960-1980 (14+18+19)	-	-	59,651	-	766,083	-	2,407,331
21. Average (1970) annual demand (line 20 ÷ 20 years)	-	-	2,983	-	38,304	-	120,367

TABLE B-2

ECONOMIC OCCUPATIONAL DEMAND

1960-1980 Demand for Graduates, by Educational Level

Upgraded Estimate*

	1	2	3	4	5	6	7
Line	Total	% with Univ. Degree	Univ. Stock (1 x 2)	% with 12 grade	12 grade Stock (1 x 4)	% with 7 grade	7 grade Stock (1 x 6)
1. Agriculture, Forestry, Hunting & Fishing	16,590,000	.015	2,488	.802	133,052	8.916	1,479,164
2. Non-Agriculture: Professional, Technical & related workers	568,800	8.990	51,135	78.758	447,975	100.000	568,800
3. " : Admin., Exec. & Managerial workers	85,320	6.910	5,896	68.356	58,321	95.104	81,143
4. " : Clerical workers	511,920	3.462	17,723	41.608	213,000	100.000	511,920
5. " : Sales workers	2,033,460	.149	3,030	2.526	51,365	20.061	407,932
6. " : Miners, quarrymen & related workers	85,320	.166	142	10.996	9,382	34.921	29,795
7. " : Workers in Transport & Communication occupation	426,600	.282	1,203	2.972	12,678	25.262	107,768
8. " : Craftsmen, Production workers	2,403,180	.334	8,027	1.932	46,429	13.374	321,401
9. " : Service, Sport & Recreation workers	782,100	.349	2,730	2.972	23,244	13.374	104,598
10. " : N.E.C. workers	213,300	.166	354	4.161	8,875	37.150	79,241
11. Non-Agriculture Labor Force (2 thru 10)	7,110,000	-	90,240	-	871,269	-	2,212,598
12. 1980 Labor Force (1 + 11)	23,700,000	.391	92,728	4.238	1,004,321	15.577	3,691,762
13. 1960 Labor Force	13,836,984	.160	22,139	.870	120,382	5.85	809,464
14. Net Additions 1960-1980 (12 - 13)	-	-	70,589	-	883,939	-	2,882,298
15. 1960 Population (11 years and over)	17,265,117	.160	27,624	.870	150,206	5.85	1,010,009
16. 1980 Non-Econ. Active (11 years and over)	7,400,000	.391	28,934	4.238	313,612	15.577	1,152,698
17. 1960 Non-Econ. Active (11 years and over)	3,428,133	.160	5,485	.870	29,825	5.85	200,546
18. Net Additions, Non-Economic Active 1960-1980 (16 - 17)	-	-	23,449	-	283,787	-	952,152
19. Outflows, 11 years and over (19.63% of line 15)	-	-	5,423	-	29,485	-	198,265
20. Demand 1960-1980 (14 + 18 + 19)	-	-	99,461	-	1,197,211	-	4,032,715
21. Average (1970) Annual Demand (line 20 ÷ 20 years)	-	-	4,973	-	59,861	-	201,636

* Percent of population having educational level shown is upgraded by 2% per year from 1960 attainments.

TRENDS IN ECONOMIC OUTPUT

41. This stage represents a more detailed level of economic analysis. Here, reliance is placed upon projections of output by specific economic sectors, as is shown in Table III. Although in principle this method could be used for making 1980 estimates, the rationale for the necessary underlying assumptions, especially about productivity changes, becomes extremely uncertain, and we have therefore applied this method only to forecasts for 1960-1966.

42. C-1. Educational Attainments by Sector same as in 1960. This method must be accompanied in various stages, the first of which is shown in Table III. First, output estimates by various economic sectors must be obtained. With one exception, we relied upon estimates made by N.E.D.B. The exception is the construction sector which we assumed to continue growing at a rate only slightly below that of prior years, rather than levelling off, as was assumed by the National Income Division. Although the construction boom that Bangkok-Thonburi has experienced in recent years may well level off within three years, there is no reason to assume that the same will happen in the remainder of the country. Indeed, if relatively prosperous times continue, as the forecasts for the remaining sectors imply, and if additions to the economic infrastructure continue to be made, there is reason to believe that the construction boom will be extended to some other parts of the country.

43. Given the employment and labor force estimates for 1966, the total increase in output implies an increase on output per employed person of slightly over 4 per cent per year, as compared with 3 per cent experienced in recent years, and estimated to continue by N.E.D.B. The discrepancy is explainable mainly by our higher estimate for construction, though perhaps also by our acceptance of Das Gupta's conservative labor force estimate.

44. Second, it was necessary to make some assumptions about changes in the output-labor ratio, or what for most purposes can be called labor productivity. The assumptions used can be found in the middle of Table III. Except for agriculture, the figures found there represent our best guess, based upon reasoned judgment and the experience of other countries, of what is likely to happen to productivity during the period. These assumptions are fairly critical for the final outcome and should be subject to careful scrutiny before final acceptance.

45. On the basis of these output and productivity assumptions, the required employment levels by sector were established. These were those checked against past trends and labor force projections for consistency and reasonableness.

TABLE III

1966 Employment Estimates By Sector

	Average Annual % increase in real output 1958-61	1960					Pro-ductivity Assump. %	1966					Index of Change 1960 - 1966		Annual % Change 1960 - 1966	
		Output		Employment		Output/ Employee		Output/ Employee	Output[xx]		Employment					
		Mill.Baht	%	Absolute	%				Mill.Baht	%	Absolute	%	Output	Employ-ment	Output	Employ-ment
Ag. & Live-stock	7.51	18,482.2	34.9	11,184,998	82.2	.0016524	(1)	.0016803	21,576	27.0	12,840,657	80.06	1.17	1.15	3	2.5
Fisheries	5.45	1,031.7	1.9	110,807	0.8	.0093107	4.5	.012132	1,388	1.7	114,408	0.71	1.34	1.03	5	0.5
Forestry	2.3	1,389.3	2.6	36,391	0.3	.0381770	2	.042987	1,473	1.8	34,266	0.21	1.06	-0.06	1	-0.025
Min.& Quas.	16.58	794.6	1.5	29,556	0.2	.0268845	3	.032100	1,148	1.4	35,763	0.22	1.44	1.21	6	3.25
Manufacturing	8.69	5,949.6	11.2	470,148	3.4	.0126547	4.5	.016489	10,853	13.6	658,196	4.10	1.82	1.4	11	6
Construction	32.5	2,671.0	5.0	68,659	0.5	.0389024	4.5	.050689	9,000	11.3	177,550	1.11	3.37	2.58	22.5	17
Elec.& Water Supply.	14.21	176.1	0.3	15,466	0.1	.0113862	5	.015258	488	.8	31,983	0.2	2.77	2.07	18.5	13
Wholesale & Retail Trade	7.17	9,768.9	18.5	769,883	5.7	.0126888	3	.015150	13,312	16.7	878,674	5.48	1.36	1.14	5.5	2
Bkg.Ins.r.e.	10.88	2,593.4	4.9	96,441	0.7	.0268910	5	.0360340	4,121	5.2	114,364	0.71	1.58	1.18	8	3
Services	6.32	6,047.1	11.4	654,215	4.8	.0092432	1	.098114	8,714	10.9	888,150	5.54	1.44	1.36	6.5	5.5
Comm.& Trans.	23.17	4,011.3	7.6	165,514	1.2	.0242354	3	.028938	7,648	9.6	264,289	1.66	1.91	1.6	12	8.25
Total ...		52,915.2	100	13,602,078	100	.0038902	(4)	.004970	79,271	100	16,038,300[x]	100	1.51	1.18	7	3
Labor Force				14,100,000							16,620,000					

x. Derived so as to keep the same ratio between total employed in sectors specified and the labor force estimate.

xx. Output estimates in Baht by National Income Division for all sectors except construction.

46. The agriculture sector was treated separately, however. Given the large degree of underemployment in agriculture, this sector tends to act as something of a residual, supplying labor to the non-agricultural sectors when required, absorbing labor when not required elsewhere. In our estimate, therefore, we treated agriculture as a residual, calculating the employment in this sector as the differences between the total projected employment level and the amount required by all other sectors. Working backward to determine the productivity gain for agriculture implied by this procedure, we found it to be somewhat less than one per cent per year, a figure which prima facie seems reasonable.

47. The next steps are shown in Tables C-1 and C-2. These are described in detail in Appendix B. The 1960 educational attainments of the labor force by economic sectors were applied to the 1966 sectoral employment estimates and aggregated to obtain a first approximation of the required stock of educated manpower. The economically non-active labor force was assumed to require comparable levels of training. These estimates of required stocks were turned into educational output requirements by applying the same procedures indicated above for estimating losses due to deaths.

48. C-2. Economic Sector Demands, 1960-80 Educational Attainments Upgraded. The above procedure is minimal in the sense that no upgrading of educational attainment within economic sectors was assumed. As such, it is open to criticism on the grounds that without any upgrading in educational attainments an overall increase in productivity of 4 per cent, or even 3 per cent, is unlikely to come about. Although this criticism is likely to be correct in the long run, such productivity gains might be sustained for the next three years without any upgrading in formal educational levels on the basis of improvements in physical capital, in-service training, and added work experience that may apply during this period. Nevertheless, it is useless to show what the educational requirements would be if some of the productivity gains have to come from an improvement in educational attainment levels.

49. For this purpose we have assumed that the fractions of the labor force having the educational levels shown would increase by 2% per year, for the reasons developed in paragraph 18, above.

OCCUPATIONAL DEMAND IN SELECTED SECTORS

50. Our final set of demand estimates are for only a portion of the economy, while the foregoing estimates attempted to include the entire population, both economically active and non-active. The purpose of the

TABLE C-1

ECONOMIC SECTOR DEMAND

1960-1966 Demand for Graduates by Educational Level, Minimum Estimate

	1	2	3	4	5	6	7	8	9
L i n e	Total	% with Univ. Degree	Univ. Stock (1 x 2)	% with 12 grade	12 grade Stock (1 x 4)	% with 7 grade	7 grade Stock (1 x 6)	% with 4 grade	4 grade Stock (1 x 8)
1. Agriculture, Forestry, Hunting & Fishing	12,840,657	.01	1,284	.54	69,339	5.90	757,598	56.0	7,190,767
2. Mining and Quarrying	35,763	.10	36	1.50	536	9.50	3,397	56.0	20,027
3. Manufacturing	658,196	.15	987	1.50	9,872	9.50	62,528	56.0	368,589
4. Construction	177,550	.55	976	4.50	7,989	15.30	27,165	59.0	104,754
5. Electricity, Water Supply & Sanitary	31,983	1.30	415	10.50	3,358	32.00	10,234	81.0	25,906
6. Commerce	993,038	.34	3,376	1.70	16,881	17.50	173,781	48.0	476,658
7. Transport, Storage & Communication	264,289	.54	1,427	.53	1,400	3.05	8,060	76.0	200,859
8. Services	888,150	1.90	16,874	16.20	143,800	40.00	355,260	76.0	674,994
9. Others (Unclassified)	730,374	.10	730	0.94	6,866	8.40	61,351	48.0	350,579
10. 1966 Labor Force (1 thru 9)	16,620,000	.157	26,105	1.565	260,121	8.78	1,459,374	56.637	9,413,133
11. 1960 Labor Force	13,836,984	.16	22,139	0.87	120,382	5.85	809,464	51.4	7,112,210
12. Net additions to L/F, 1960-1966 (10 - 11)	-	-	3,966	-	139,739	-	649,910	-	2,300,923
13. 1966 Non-Econ. Active (11 years and over)	4,810,000	.157	7,552	1.565	75,276	8.78	422,318	56.637	2,724,240
14. 1960 Non-Econ. Active	3,428,133	.16	5,485	0.87	29,824	5.85	200,546	51.4	1,762,060
15. Net additions 1960-1966, Non-Econ. Active (13 - 14)	-	-	2,067	-	45,452	-	221,772	-	962,180
16. 1960 population (11 years and over)	17,265,117	.16	27,624	0.87	150,206	5.85	1,010,009	51.4	8,874,270
17. Outflows, 11 years and over (5.264% of line 16)	-	-	1,454	-	7,907	-	53,167	-	467,142
18. Gross Demand (12 + 15 + 17)	-	-	7,487	-	193,098	-	924,849	-	3,730,245
19. Average Annual Demand (line 18 ÷ 6 years)	-	-	1,248	-	32,183	-	154,141	-	621,707

TABLE C-2

ECONOMIC SECTOR DEMAND

1960-1966 Demand for Graduates by Educational Level, Upgraded Estimate*

	1	2	3	4	5	6	7	8	9
L i n e	Total	% with Univ. Degree	Univ. Stock (1 x 2)	% with 12 grade	12 grade Stock (1 x 4)	% with 7 grade	7 Grade Stock (1 x 6)	% with 4 grade	4 grade Stock (1 x 8)
1. Agriculture, Forestry, Hunting and Fishing	12,840,657	0.01126	1,446	0.6081	78,084	6.6446	853,210	63,0672	8,098,243
2. Mining and Quarrying	35,763	0.1126	40	1.6893	604	10.6989	3,826	63.0672	22,555
3. Manufacturing	658,196	0.1689	1,112	1.6893	11,119	10.6989	70,420	63.0672	415,106
4. Construction	177,550	0.6194	1,100	5.0679	8,998	17.2309	30,593	66.4458	117,975
5. Electricity, Water Supply & Sanitary	31,983	1.4641	468	11.8251	3,782	36,0384	11,526	91.2222	29,176
6. Commerce	993,038	0.3829	3,802	1.9145	19,012	19,7085	195,713	54.0576	536,813
7. Transport, Storage and Communication	264,289	0.6081	1,607	0.5969	1,578	3.4349	9,078	85.5912	226,208
8. Services	888,150	2.1398	19,005	18.2444	162,038	45.0430	40,009	85.5912	760,178
9. Others (unclassified)	730,374	0.1126	822	1.0586	7,732	9.4600	69,093	54.0576	394,823
10. 1966 Labor Force (1 thru 9)	16,620,000	0.1769	29,402	1.7626	292,947	7.7224	1,283,468	63.7851	10,601,077
11. 1960 Labor Force	13,836,984	0.1600	22,139	0.8700	120,382	5.8500	809.464	51.4000	7,112,210
12. Net additions to L/F, 1960-1966 (10 - 11)	-	-	7,263	-	172,565	-	474,004	-	3,488,867
13. 1966 Non-Econ. Active (11 years and over)	4,810,000	0.1769	8,509	1.7626	84,781	7.7224	371,447	63.7851	3,068,063
14. 1960 Non-Econ. Active	3,428,133	0.1600	5,485	0.8700	29,824	5.8500	200,546	51.4000	1,762,060
15. Net additions 1960-1966, Non Econ. Active (13 - 14)	-	-	3,024	-	54,957	-	170,901	-	1,306,003
16. 1960 Population (11 years and over)	17,265,117	0.1600	27,624	0.8700	150,206	5.8500	1,010,009	51.4000	8,874,270
17. Outflows, 11 years and over (5.264% of line 16)	-	-	1,454	-	7,907	-	53,167	-	467,142
18. Gross Demand (12 + 15 + 17)	-	-	11,741	-	235,429	-	698,072	-	5,262,012
19. Average Annual Demand (line 18 ÷ 6 years)	-	-	1,957	-	39,238	-	116,345	-	877,002

* % of population having educational level shown is upgraded 2% per year from 1960 attainments

final set was to specify at least the partial demand for certain high and middle level manpower categories. These figures give some indication of how to decompose the aggregates "university graduates" and "secondary graduates" into the occupations for which such graduates may train and continual effort must be expended in order to extend this detail breakdown.

51. To accomplish this analysis, a separate inquiry was made into trends in occupational composition of the work force, as is shown in Table IV. This analysis gives us an instrument for decomposing the required numbers of graduates into an occupational distribution. From such a distribution, in turn, one can infer something about the demands by major field of study -- engineering, business administration, etc. This analysis is the subject of the next several paragraphs.

52. The estimates in Table IV were prepared by undertaking a systematic analysis of the semi-annual Labor Market Surveys that have been conducted by the Bureau of Public Welfare since July 1959. These trends, weighted by sectoral employment, were then tied into the 1966 employment forecast, described above for the C-1 and C-2 estimates.

53. The next step is the preparation of Table D-1 "High and Middle Level Manpower Demand 1960-1966 for Selected Sectors and Occupations." Employment added, 1960-1966, from Table IV, was entered in the first line of D-1. Under this line is an attempt to distribute each occupational requirement by educational level. The percentages used in this distribution were obtained from comparative international information given on page 110-111 in the Parnes OECD manual "Forecasting Educational Needs for Economic and Social Development." In every case we used the lowest percentage attainment that Parnes listed in order to state minimal needs.

54. For the sectors included, the high level needs are concentrated in the professional category, although some 400 administrative personnel per year will be needed. At the secondary or middle level, added employment will be substantial in professional and technical, skilled and semi-skilled, clerical and sales, and managerial, in that order. We estimate that vocational school training could be useful to most of those who will go into technician work or into skilled and semi-skilled, and perhaps to a few of those going into clerical and sales. From this reasoning it might be said that of the 9,424 secondary graduates these sectors require per year, some 6,000 per year could be graduates of some vocational training.

55. The D-1 estimate is the first step in one method of developing more detailed (disaggregated) estimates of needs for specialized occupations. Whereas here we were able to discriminate only among four major occupational groups at each of three levels of educational attainment, further data and analysis should permit the breaking down of each occupational group into narrower categories representing critically needed skills.

TABLE IV

Estimated 1960 - 1966 Manpower Requirements For Certain Occupations in Selected Sectors

			1966		1966-1960	
	% of B-T	Absolute Whole Kingdom	%	Absolute Whole Kingdom	Absolute Change	% Change
Employment		13,602,078	100.00	16,038,300	2,436,222	17.9
Sectors not covered* in Labor Market Survey.		11,430,411		13,202,644	1,772,233	15.5
Sectors covered in# Labor Market Survey	100	2,171,667	100.00	2,835,656	663,989	30.6
Managers	3.55	77,094	4.35	123,271	46,177	59.9
Prof. & Tech.	21.60	469,080	19.95	565,710	96,630	20.6
Cler. & Sales	23.30	505,998	27.21	771,722	265,724	52.5
Skilled and Semi-skilled	21.20	460,394	23.17	656,927	196,533	42.7
Unskilled	30.35	659,101	25.32	718,026	58,925	8.9

* Includes agricultural crops and livestock, fisheries, forestry, mining and quarrying, construction and other structures.

# Includes manufacturing, trade and finance, transportation, communication and power, and services (private and government agencies).

TABLE D-1

High and Middle Level Manpower Demand, 1960-1966 for Selected Sectors[1] and Occupations

	Managers	Prof. & Tech.	Clerical and Sales	Skilled & Semi-Skilled	Total	Total Adjusted for Outflow [2]
Employment Added 1960-1966 (From Table IV)	46,177	96,630	265,724	196,533	605,064	
University Graduates						
Per Cent	5[4]	11[3]	0	0		
No. 1960-1966	2,309	10,629	0	0	12,938	13,618
No. per year						2,270
Secondary Graduates						
Per Cent	9[4]	22[3]	4[3]	9[5]	-	
No. 1960-1966	4,156	21,258	10,629	17,688	53,731	56,541
No. Per Year						9,424
Less Than Secondary						
Per Cent	86	67	96	91	-	
No. 1960-1966	39,712	64,743	255,095	178,845	538,595	

[1] Sectors included = Manufacturing, Trade and Finance, Transportation, Communication, Power and Services In 1966 these sectors will account for 57.0 per cent of gross domestic product.

[2] 5.26% added, as was done in Tables A-2a, C-1 and C-2.

[3] India, 1955.

[4] Italy, 1951.

[5] Japan, 1959.

NOTES FOR APPENDIX A

Two technical matters associated with the methods used to estimate demand need to be treated briefly.

1. Implications for Teacher Supply. Because the demand methods were comprehensive in the sense of including *all* manpower, teacher requirements are included, and specifically in the economic sector labelled "services" or in the occupational category labelled "Service Workers". However, teacher educational attainments are generally higher than those for the average of these categories. Now some of the demand estimates would sharply expand enrollments and graduates, and hence also the need for teachers. To the extent that teachers are thus required to increase substantially faster than the sector in which they are included, to that extent our method tends to understate the demands for graduates at university and secondary levels. A correction for this "derived" or "second order" demand could be developed

2. "Appropriateness" of stocks and flows in the base year of 1960. The method being used here appears to say that the 1960 stock - - that is whatever educational attainment the labor force had in a given sector is 1960 - - is the one that was appropriate. It does say that. But in doing so it does not necessarily say that such stocks were optimal. These stocks did, however, *work* in the sense that the sector did experience a specified economic output using that particular stock of manpower. This would appear to be adequate justification for calculating the implicit coefficient in the relationships of stocks to output and then applying these same (or upgraded) coefficients to future economic output.

The stock method, while determining an empirical coefficient for each sector by educational attainment, as described in the preceding paragraph does not depend upon the appropriateness of any educational *flow* rates as of the base year of 1960. The actual educational output rates may or may not have been adjusted to the amounts that would regenerate a stock of a given composition. When demand is converted to flows and when such flows are compared with probable supply flows, there may be wide imbalances. These imbalances could arise from supply rates at certain educational levels and at particular times being inappropriate for a regeneration of the existing stock composition. To the degree that policy changes like Thailand's National Scheme of Education are being implemented, these flow rates in 1960 are probably significantly different from those necessary for the regeneration of the existing stock composition.

B

Demand for Graduates by Education Level 1960-1966 Detailed Derivation

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APPENDIX B

DEMAND FOR GRADUATES BY EDUCATIONAL LEVEL, 1960-1966, WITH MINIMUM AND UPGRADED ESTIMATES

Purpose

1. The purpose of this working paper is to present and explain Tables C-1 and C-2, which give preliminary estimates of the number of graduates required between 1960 and 1966 from each level of schooling. This detailed derivation is illustrative of how working papers might be prepared on all future estimates.

Definitions

2. It is important to state the meaning we have assigned to certain terms. The first of these is "1960-1966 Demand." By this we mean the requirements placed upon the educational system to produce graduates between 1960 and 1966. These requirements come primarily from the kind of economy that is expected for 1966. Allowance is also made for the requirements that come from the need to educate those who may not be in the Labor Force in 1966 -- students, housewives etc. These are called "non-economically active."

3. The next term to define is "educational level." The table presents results for the following levels: University degree; 12 year secondary; 7 year primary; and 4 year primary. Actually, the requirements at any number of years of schooling can easily be calculated. This is because the method used allows interpolation, as will be described in a later paragraph.

4. The next definition to make is why Table C-1 uses the term "minimum" in "minimum estimate." This is done because the whole calculation is based on Thailand's 1960 educational attainment by economic sector. In other words, the results of the table show demand under the assumption that the 1966 Labor Force in each economic sector has only as many years of schooling as the same sector had in 1960.

5. Defining minimum as above may seem to be understating Thailand's educational needs. It is. But we believe that even this "minimum" may require substantial expansion of education. This is because (a) the composition of the Labor Force will change between 1960 and 1966. It will shift into economic sectors that require more education (and that required more education in 1960). (b) There is a considerable population increase, which will also require more enrollments. Thus in the Minimum Table we are estimating only what Thailand will need to do to stay even educationally.

6. Table C-2 is similar to Table C-1 but it represents an "Upgraded" estimate. The distinction between "Minimum" and "Upgraded" lies in the latter's assumption advancing educational attainments over those existing in 1960. Perhaps the "Upgraded" estimation, if it is financially feasible, will turn out to be more appropriate than the Minimum Estimate. This is because one would expect the 1966 Labor Force to be more sophisticated in each sector than the 1960 Labor Force. In fact, the development and higher output per worker that are expected for 1966 may be possible only if the higher educational attainment is present in the Labor Force. The method and amount by which educational attainment is increased for the "Upgraded" Estimate is described subsequently. Essentially it assumes a 2% per year rise in the fraction of people completing each level of education.

7. An important later step will be to break down ("decompose") the graduates at university and secondary levels. This means to determine for college graduates the numbers of those specializing in medicine, engineering, etc. At secondary level it means distinguishing at least between vocational and non-vocational.

8. Elsewhere will be a comparison of these demand estimates with supply. By "supply" is meant the capacity of the educational system to turn out graduates, given present patterns and trends of educational expenditures. The supply estimates are being prepared independently of these demand estimates.

General Scheme of the Estimates

9. In this paragraph we shall give a summary statement of how the Tables are constructed. Then in following paragraphs we shall take up each column and line separately, telling how each is derived. The general scheme is first to find the composition of the 1966 population by economic sector. Upon this is imposed the educational attainment of that sector in 1960. A similar calculation is made for the non-economically active. The sum gives what economists call the "stock" of Thailand's 1966 manpower. We then subtract from this "stock" the 1960 stock by educational attainment. The result is the net change in stock from 1960 to 1966. But this net change would be the demands on education only if all the 1960 manpower were still available in 1966. Since deaths and other outflows will occur, we must allow for them. Therefore the "gross" additions that must be supplied by the educational system include allowance for outflows.

10. We realize that paragraph 9 is a densely-packed one. If the reader does not understand the method fully, he may be assisted by the following detailed derivation.

Explanation of Columns

11. Column 1. 1966 Employment was estimated by the method described in Chapter II. The number of non-economically active 11 years and over in 1966 was estimated from the Population study by Das Gupta et als. A simple interpolation between 1960 and 1970 was made.

12. Columns 2, 4, 6, 8, and 10. These percentages were taken from graphs of 1960 educational attainment by economic sector. They are plotted cumulatively. This means they are read "a given percentage has at least the amount of schooling shown." In other words to the left of the curve are those who do have that much schooling, and to the right are those who don't have the amount shown. The cumulative plotting allows interpolation at any derived level. A semi-log grid was used simply to permit more accurate plotting and reading of the higher educational attainments.

13. The educational attainment data by sector were available only for selected municipalities, not for the whole Kingdom. We used the data for Bangkok-Thonburi. We included both male and female. Perhaps the choice of the two largest cities biases our results to overstate the 1966 demand. If so, that may help compensate for the other bias of Table C-1, that of leaving the 1966 stock only as well schooled as the 1960 stock was.

14. The educational attainments for Table C-2 were upgraded over those used in Table C-1. A number of different assumptions about the nature of the advance for the period 1960 to 1966 could be made. We arbitrarily chose one for the purpose of comparison with the "minimum" estimate. The assumption we used is that the fraction completing each level will increase by 2% per year. The figure of 2% per year was selected on the ground that the current economic development plan calls for a per capita increase in productivity of 3% per year. Economists are finding that perhaps one-third of productivity increases are attributable to improvements in human capital, largely through education.

15. Some may ask if we should not have decomposed each economic sector into its occupational components before applying educational attainment. It is true that educational attainment might be more directly correlated with an occupation (for example, "professional" or "administrative" or "clerical") than with a sector like "manufacturing","transport" etc. Unfortunately data from the 1960 census were available only by sector or by occupation, but not by occupation within a single sector. Special runs of the cards might be made to undertake this refinement, but we did not have time. Thus we had to choose. We decided that for 1966 we can forecast sector composition more accurately than occupational composition. (For 1980 we are using the occupational approach, at least within the non-agriculture part of the economy.) We made a separate investigation of occupational trends by sector, using the Semi-annual Employment Market Surveys. We are using these results to help us decompose total university demand and total secondary demand.

16. Columns 3, 5, 7, and 9. These are multiplications of column 1 times the respective % attainments.

Explanation of Lines

17. Lines 1 through 10. These are the employment forecasts of Working Paper No. 4, Revised.

18. Line 11. Here is entered the 1960 Labor Force by educational attainment, from the Census.

19. Line 12. The difference (line 10 minus line 11) represents the net additions that must be made to Thailand's Labor Force during the six year interval.

20. Line 13. It might at first glance appear that the only economic requirements for education are those necessary for the Labor Force. But such a view would neglect the education of students or those in the pipeline for the future Labor Force. It would also neglect housewives and others outside the Labor Force at a particular time. And even if they don't they exercise a great educational and motivational influence on their children and others in accordance with the amount of their own education.

21. We compared the 1960 educational attainment of non-economically active with that of the economically active (the Labor Force). There is relatively little difference, as would be expected. For this reason, in both Tables we gave the non-economically active population in 1966 the same educational attainments as the Labor Force. Another reason for doing so is that policy would have to be equal for the two groups because one cannot predict which students will or will not join the Labor Force.

22. Line 14. This is simply the 1960 Census distribution of educational attainments of the non-economically active population.

23. Line 15. As was done earlier for the Labor Force, net additions, 1960-1966, are determined by subtracting the two stocks of manpower.

24. Line 16. This is the total population 11 years and older in 1960.

25. Line 17. As was mentioned briefly in paragraph 9, we must allow for outflows. These we estimated from the deaths in the population 11 years and over that are expected in the interval 1960 to 1966. For the whole population 11 years and over the number is 909,000, or 5.264% of the 1960 population 11 years and over. Allowing for outflow has the effect of increasing the demand sufficiently to replace losses that occur.

26. Line 18. By combining the demands for the Labor Force with those for the non-economically active and with those to replace outflows, we arrive at a final total demand upon the educational system for the six year interval. These are the figures that can be compared with the capacity of the educational system to supply graduates. Since about half of the time interval has already passed, we will be looking mainly at comparisons for the last three years. Capacity for such an early date must, of course, already largely exist. There may be some flexibility, through alternative utilization of that capacity, to change the output somewhat. The inertia (long lead time) of the educational system is why we are also estimating demand for 1960-1980.

C

Municipal Employment in Thailand

Mr. Sumner Sharpe
Mr. William J. Platt

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APPENDIX C

MUNICIPAL EMPLOYMENT IN THAILAND

In 1961, there were 15,833 municipal employees in the 120 municipalities of Thailand. In 1962, it is expected* that there will be more than 16,000 municipal employees, an increase of a little less than 2%.

1961 MUNICIPAL EMPLOYMENT**

	PERMANENT EMPLOYEES BY RANK						TEMPORARY EMPLOYEES	UNSKILLED EMPLOYEES	TOTAL
	Spec.	I	II	III	IV	Total			
Bangkok	11	28	183	330	1,331	1,883	756	4,047	6,686
Thonburi	-	5	26	75	489	595	236	644	1,475
Rest of Country	-	6	91	276	1,231	1,604	1,882	4,186	7,672
TOTAL	11	39	300	681	3,051	4,082	2,874	8,877	15,833

The Municipal Service Commission

The Municipal Service Commission has been set up to serve the municipal employees of all of the 120 municipalities in Thailand. It is not an operational commission, but an advisory group. The members, all ex-officio, are the directors of all the different departments in the Ministry of Interior. The secretary to the Commission is the Director of the Bureau of Local Government, and his staff acts as technical advisors to the Commission. The Bureau of Local Government is under the ministerial Department of Local Administration.

The rules and regulations adopted by the Commission are in accordance with those of the National Civil Service System (NCSS), Ministry of Finance. Although there are no direct administrative ties between the Commission and the NCSS, the Bureau of Local Government often consults the NCSS when questions concerning employment arise.

Classification of Employees

The salary ranges for municipal employees closely follows those used by the NCSS, but with exceptions. There are three major classifications of municipal employees.

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* From: Interview with Khun Vichit Chamsai, Bureau of Local Government, Department of Local Administration, Ministry of Interior.

**From: Annual Municipal Report, 1961, Bureau of Local Government, Department of Local Administration, Ministry of Interior.

1. Permanent Employees. Within this group there are five categories or ranks. The highest rank is that of Special Officials. In this category, there were only ten such officials in all of Thailand in 1962, and all of them were in Bangkok. Their titles are as follows: three City Clerks, one Inspector, two Hospital Directors, one Director of Municipal Works, one Public Health Director, one Assessor, and one Sanitation Director. The other ranks in the permanent category of employees will be called Rank I, Rank II, Rank III, and Rank IV.

2. Temporary Employees. Some of the employee titles in this category are account clerk, typist, supply clerk, chief janitor, chief guard and mechanics.

3. Unskilled Employees. These are primarily the manual workers who receive daily wages, whereas the Permanent and Temporary Employees receive monthly wages.

Salary Scales by Rank

In presenting below the figures for salaries, it must be pointed out there are two parts to this salary. One is the "core salary" based on the person's classification and rank. The other part is what can be called a "living allowance." The purpose of this allowance is to provide compensation so that total salaries are in keeping with the level of living which has been rising steadily since World War II. The determination of these "living allowances" is based directly on those prescribed by the NCSS. Core salary is listed first and below it the take home pay including living allowance, in parentheses.

1. Special Officials. Within this rank, in municipal service, there are only two ranges, whereas there are four ranges in the NCSS. A new decree will soon provide salary scales equivalent to that of the NCSS.

(baht per month)

Range 1.	650 (4,300)	700 (4,600)	750 (4,900)	800 (5,200)
Range 2.	900 (5,700)	1,000 (6,200)	1,100 (6,700)	1,200 (7,200)

2. Rank I Officials

Range 1.	350 (2,650)	380 (2,800)	420 (3,000)	460 (3,200)
Range 2.	500 (3,600)	550 (3,800)	600 (4,000)	650 (4,300)

3. Rank II Officials

Range 1.	160 (1,200)	170 (1,300)	180 (1,400)	190 (1,500)
Range 2.	200 (1,600)	220 (1,750)	240 (1,980)	260 (2,050)
Range 3.	280 (2,200)	300 (2,350)	320 (2,350)	340 (2,650)

4. Rank III Officials

Range 1.	90 (750)	100 (800)	110 (850)	120 (900)
Range 2.	130 (1,000)	140 (1,050)	150 (1,100)	160 (1,200)

5. Rank IV Officials

Range 1.	30 (450)	35 (475)	40 (500)	45 (525)
Range 2.	50 (550)	55 (575)	60 (600)	65 (625)
Range 3.	70 (650)	75 (675)	80 (700)	85 (725)
Range 4. (Special)	90 (750)	100 (800)	110 (850)	120 (900)

6. Temporary Employees

The minimum salary for the Temporary Employees has a "core" of Baht 30 per month with a take-home salary of Baht 450 per month.

The maximum salary for Temporary Employees has a "core" of Baht 120, and a final (adjusted) salary of Baht 900 per month.

7. Unskilled Workers

The unskilled manual workers receive daily rather than monthly wages. Presented on the basis of a monthly wage, the minimum take-home salary would be a "core" of Baht 30 and a final salary of Baht 450 per month. The maximum would be a "core salary" of Baht 45, and a final of Baht 625 per month.

Minimum Requirements for Employment and Promotion

Generally, there are three main conditions which determine employment in municipal service: 1) time spent in the municipal service plus salary level, 2) transfer from other divisions within municipal service and also from government service, and 3) educational qualifications (plus time spent in municipal service.) Goven below are the minimum requirements necessary for determining employment or promotion within municipal service.

1. Manual, Unskilled Employees

The only requirement for municipal work at this level is that person be literate.

2. Temporary Employees

The minimum educational requirement for this category is completion of Matayom 2 (6 years of school) and a letter of recommendation from a former employer (or from the school where they had studied).

3. Rank IV Officials (Permanent)

The minimum educational requirement is completion of Matayom 6 (10 years of school).

4. Rank III Officials (Permanent)

(a) Three years of municipal service and a minimum "core salary" of Baht 60 per month, or

(b) Transfer from within Rank III in another municipal office, or

(c) A minimum educational requirement of a Bachelor's Degree from a college or university.

5. Rank II Officials (Permanent)

(a) Three years service as a Rank III official and a minimum "core salary" of Baht 130 per month, or

(b) Transfer within Rank II, or

(c) A Bachelor's Degree and one year of service as a Rank III official -- qualify for examination, or a Master's Degree from a local or foreign university plus one year as a Rank III official - automatic promotion. (B.S. starts with "core salary" of Baht 160, M.A. (local) with Baht 180, and M.S. (abroad) with Baht 220.)

6. Rank I Officials (Permanent)

(a) Three years as a Rank II official and a minimum "core salary" of Baht 280 -- qualify for examination, or

(b) A Master's Degree or Ph.D. and one year of service as a Rank II official plus a minimum core salary of Baht 280--qualify for examination.

(No transfer is allowed in Rank I positions.)

7. Special Officials

These positions are by special appointment of the Municipal Service Commission only, with no requirements other than the official must have had a Rank I standing prior to appointment. There are no conditions of time in Rank I service, minimum core salary, nor minimum educational requirements.

Problems

It is very difficult to attract well-qualified people to municipal service. This is probably due to the lack of flexibility with regard to promotion within municipal service. This is especially true in the small municipalities, where opportunities for advancement are severely limited. It is hoped that a new decree which will allow people to transfer from municipal service to the NCSS, and vice versa, will soon provide some much-needed flexibility.

Thailand is reaching a point where its municipal service in Bangkok-Thonburi needs graduate traffic engineers. Mr. Hamilton says there are now none in Thailand.

The 54 municipal health centers located outside the metropolitan area are staffed by only 37 doctors. Incentives to attract medical talent to the rural areas do not appear to be adequate.

A similar problem of distribution applies to graduate civil engineers. Only 9 of these were outside B-T in 1961, yet Mr. Hamilton believes the 120 outlying municipalities should be employing nearer 60 civil engineers.

Finally, there is no full-time organization for improving the municipal employment situation, such as the NCSS in the national scene. Such matters as the improvement of conditions and the training of municipal personnel are not given proper attention. The Bureau of Local Government, which has an advisory responsibility to the Municipal Service Commission, serves 120 municipalities and 478 Sanitary Boards*. The staff and the scale of operations of the Bureau may be inadequate to cope with the numerous demands of all these local government units.

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*In Thailand there are 478 Sanitary Boards, which employ about 3,000 workers. The Sanitary Board is a local government unit separate from the municipalities. These Boards provide sanitation services outside the municipal areas, and the Boards are under the jurisdiction of the provincial governments.

Persons Interviewed

Mr. Randy Hamilton, Advisor to Muncipal League of Thailand, Ministry of Interior

Mr. Vidut Chamsai, Chief of the Financial Division, Bureau of Local Government, Department of Local Administration, Ministry of Interior

Mr. Prayat Smanmit, Chief of the Division of Local Affairs, Department of Local Administration, Ministry of Interior.

D

Thaiand's International Exchanges of Middle and High level Manpower

Mr. Sumner Sharpe
Mr. William J. Platt

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APPENDIX D

THAILAND'S INTERNATIONAL EXCHANGES OF MIDDLE AND HIGH LEVEL MANPOWER.

The first purpose of this Appendix is to give some indicators of middle and high level manpower needs as they are suggested by two flows of talent:

Table 1. Thai University level students studying abroad.

Table 2. Technical assistance experts in Thailand.

The second purpose is to suggest research needs suggested by these flows. Taken together Tables I and II by no means cover all of Thailand's important international transactions in talent. For example, data on privately-sponsored Thai students studying abroad were not available. Some have stated these numbers are "substantial", but we were unable to get estimates of them. Another example are the many foreign experts who come to assist or work in private firms in Thailand. Also not covered here is a very important flow of governmental officials to and from multilateral and bilateral discussions, conferences, and seminars.

Nonetheless, some conclusions may be drawn from the two tables:

1. Professional Technical and related occupations dominate, accounting for over 80% in both tables. The flow in these categories can be expected to continue.

2. Of incoming experts, education is the largest category. A large number of these are Peace Corps teachers, often being used to teach English at secondary and above.

3. A relatively small number of both students and experts is found in the classification "Administrative and Executive". We wonder whether business administration and public administration are perhaps deserving of higher relative priority as a means of accelerating productivity and economic growth in Thailand.

4. We also wonder whether the numbers of students and experts in agriculture are not lower than would be appropriate to the importance of that sector.

5. The growth trends over the years shown in both tables are not necessarily indicative of the true expansion that has occurred. Data from more reporting agencies were available for the more recent years. Thus the figures for earlier years are understated and cannot be compared directly with the 1963 information.

6. We were unable to find information on the total number of Thai students studying abroad, including those under private auspices. We believe this information should be developed.

7. We also recommend that periodically surveys be made to determine the employment experience of students who have returned. The relevance and usefulness of their training for the work they do should be assessed. This assessment will, of course, be affected by the length of employment since return. From these studies may come recommendations for new emphases in foreign education, lengths of stay, etc.

8. Another related study might be made of the costs and benefits (private and governmental) of foreign education and whether domestic or regional institutions might be created to take over some of the load of those going abroad. By more selective specialization of Thailand's higher education institutions it may become feasible to offer certain specialized programs that now require foreign study. And by pooling efforts with neighboring countries, as is already being done in the SEATO graduate school of engineering or ECAFE's new Asian Institute, it is possible to develop certain regional institutions that no single country can afford to develop individually. Such schools might become a network of specialized institutions with one or more in each cooperating country.

TABLE I

Thai University Students Studying Abroad

(Thai Government, bilateral and multi-
lateral Scholarships only)

	1963	1962	1961	1960	1959	1958	1957	1956	TOTAL
Prof., Tech.& Related									
Science & Engineer.	202	73	83	25	37	23	7	11	461
Medical	128	37	43	27	42	5	7	13	302
Agriculture	118	42	40	33	31	12	5	2	283
Social Science, etc.	235	83	85	46	39	19	12	16	535
Education	156	35	18	23	25	16	8	17	298
Sub-Total	839								
Admin. & Exec.	93	36	48	34	28	4	1	5	249
Clerical	6	1	1	-	-	-	-	-	8
Sales	-	-	-	-	-	-	-	-	-
Farmer & Related	6	1	-	1	-	-	-	-	8
Mining	9	-	1	1	-	-	-	-	11
Transportation and Communications	13	7	13	4	6	-	2	-	45
Craftsmen	26	-	8	-	1	-	-	1	36
Service	1	17	1	-	1	-	-	-	20
Totals	993	332	341	194	210	79	42	65	2,256

Note: Data on privately sponsored students studying abroad were not available.

SOURCES:

1963 - Thai Government Scholarships
- Government of Switzerland
- Government of Belgium
- Government of Italy
- Government of the Netherlands
- Government of Denmark
- Government of Australia
- International Bank for Reconstruction and Development
- Government of France
- UN 8 Category — with Special Fund I and Category II (1963-64)
- Government of Federal Republic of Germany
- Government of Japan
- United Kingdom (includes 1963 Colombo)
- U.S.O.M.

1962 - Colombo Plan
- Fulbright
- U.N. (Categories I & II)

1961 - Colombo Plan
- Fullbright
- U.N. (Categories I & II)

1960 - Colombo Plan
- Fulbright
- U.N. (Categories I & II)

1959 - Colombo Plan
Fulbright
U.N. (Categories I & II)

1958 - United Nations (Cat. I & II)
Fulbright

1957 - United Nations (Category I)
Fulbright

1956 - United Nations (Category I)
Fulbright

1955 - Fulbright

TABLE II

Foreign Experts Requested
By Agencies of the Government of Thailand

	1963	1962	1961	1960	1959	1958	TOTAL
Prof., Tech.& Related							
Science & Eng.	96	59	19	7	6	6	193
Medical	92	66	12	12	8	6	196
Agriculture	54	29	23	13	19	16	154
Social Science,etc.	118	90	14	15	19	17	273
Education	207	171	11	13	16	26	444
Sub-Total	567						
Admin. & Exec,	39	15	4	6	9	-	73
Clerical	-	-	-	-	-	-	-
Sales	-	-	-	-	-	-	-
Farmer & Related	4	-	-	-	-	-	4
Mining	1	-	-	-	-	-	1
Transport & Communic.	12	2	-	2	-	-	16
Craftsmen	7	13	2	3	7	4	36
Service	-	-	-	-	-	-	-
Totals	630	446	85	71	84	75	1,391

SOURCES OF SPONSORS:

1963 - Government of Federal Republic of Fermany
- Government of Switzerland
- Government of Australia
- International Bank for Reconstruction and Development
- Government of the Netherlands
- Government of Denmark
- Peace Corps (Requests) (228)
- Government of France
- U.S.O.M.
- United Kingdom (including Colombo)
- Government of Japan
- United Nations (Cat. I & II 1963-64)
Includes Special Fund

1962 - United Nations (Cat. I & II)
Peace Corps Requests (1961-1962) (382)
Colombo Plan

1961 - United Nations (Cat. I & II)
- Colombo Plan

1960 - United Nations (Cat. I & II)
- Colombo Plan

1959 - Colombo Plan
- United Nations (Cat. I & II)
1958 - United Nations (Cat. I & II)

E

Labour Services

Labour Division
Bureau of
Public Welfare

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APPENDIX E

LABOUR SERVICES

Certain services connected with the utilization of manpower require the establishment of a separate institution at Departmental level. The services generally provided by a Labour Department concern the employee and employee constituents of the labour force and may be roughly divided into two main categories as follows:

I. Operational Services

(a) Services in connection with the placement of workers in employment so as to promote the efficient use of human resources in economic development. These services may also be associated with the provision of vocational training facilities, and also sometimes with the rehabilitation of the disabled.

(b) Services in connection with people at work, e.g. with enforcement of standards in occupational health and safety; minimum standards of working conditions; promotion of "good employment practices" and good personnel management; and with the promotion of good labour-management relations and the provision of consiliation or arbitration services in the event of disputes between employees and workers.

II. Information Services

The collection and dissemination of information about employment trends, training needs, shortages or surpluses of particular categories of wage-earners, etc. These services are carried on a day-to-day basis and are coupled with periodical surveys and statistical compilations for wider use in planning operations in both the public and private sectors of the economy.

In Thailand, the above services, so far as they are available at all, and with certain exceptions to be noted, are provided by a Bureau in the Department of Public Welfare in the Ministry of Interior and by the Nai Amphur (district administrators) who act as the agents of this Bureau in the provinces for certain functions. The exceptions to the Bureau's responsibilities are that certain responsibilities for occupational safety rest with the Ministry of Industry; that facilities for vocational training are provided for the most part outside the Bureau of Labour (although the Bureau has a low level training center in Bangkok); and that certain employment information, e.g. that yielded by labour force sample surveys is collected by the Office of National Statistics. The rest of the "labour" services which have been listed, i.e. for people at work, for placing people in wage-earning employment, and for providing employment information, including guidance about vocational training needs, are seen to be sufficiently important in the context of the economic development of Thailand to justify the advancement in status and organization of the Bureau of Labour to be a Department of Labour. Labour affairs cannot, in a developing community, continue to be dealt with as a branch of public welfare: they should, on the contrary, be regarded as an integral part of social and economic affairs in the broadest sense.

It is important that the services rendered by the present Bureau of Labour should be kept together administratively. The labour-management relations and inspection services to people in employment go naturally together with placement and employment information services, and there are certain labour statistics which are most efficiently collected by specialists within the Bureau of Labour and not outside it. It may be administratively convenient to provide some labour services outside the Bureau; for example, it may be convenient that the Ministry of Education which is responsible for vocational schools should also have some responsibility for vocational training in institutions generally, or that specialized statistical inquiries like labour force sample surveys which require an expertise not found at present in the Bureau of Labour, should be undertaken by the Office of National Statistics. Nonetheless, the corpus of "labour affairs" concentrated in the Bureau of Labour forms a natural administrative entity, warranting the status of "department."

Placement Services

There are four placement offices: one centrally placed in Bangkok at the headquarters of the Department of Public Welfare, one at the main Bangkok railway station, one at the Bangkok northern bus terminal and one provincial office at Srisaket in the Northeast. Information is available in respect of the three Bangkok offices. In 1962 the number of applicants registering for employment at these offices is given as 12,903 (10,960 males, 1943 females), but some duplication is possible. Of these registrants, 1,507 were domiciled in the capital area and the remainder came from the provinces, i.e. they were migrants from agricultural regions. 10,791 (9,187 males, 1,604 females) were aged 15-24 and most of these can be assumed to be sons and daughters of farmers and farm labourers. Efforts to classify the registrants in main occupational categories have been abandoned because few of them have any usable skills, and most of the notified vacancies are for unskilled labour.

Vacancies notified in 1962 were for 11,317 males and 3,119 females, and 7,366 of the male and 368 of the female vacancies were recorded as outside the capital area. 6,112 vacancies for males were in agriculture (only a few for females, for whom the largest number of vacancies was in domestic service). Only 6,604 placements were recorded in 1962, and, as no consistent attempt is made to obtain evidence of placement, it would be more correct to say that 6,604 referrals were made which employers are not positively known to have rejected. (The placement total recorded for 1961 is higher: 8,588 against 15,418 notified vacancies). The live register available for placement consists at any time of the very recent registrants: efforts to contact earlier registrants lead to delays in referral which employers will not tolerate. Any placement service depends on constant attendance at the employment office, and only those who stay around can be regarded as available.

No figures of labour turn-over are available but it is evident that this placement activity is a marginal service to a part of the migratory elements within the country, who are as a whole not very numerous. Migrants coming to or passing through Bangkok who cannot help themselves look to the Bureau of Labour for help in various ways including placement, and the present placement activities are correctly seen as a part of public welfare. There are a number of private fee-charging employment agencies in Bangkok-Thonburi. In 1962, 31 of these agencies claim to have placed 1,738 persons (436 males, 1,302 females). The vacancies are not specified but those for females were presumably mostly in private domestic service. The total of vacancies is assumed to be understated. This activity also is marginal and the agencies operate at a low level of profit.

The placement services, such as they are, evidently meet a need. The question is whether Thailand needs a more highly developed service in connection with economic development. The Bureau of Labour considers that a limited number of additional offices should be opened in certain provincial areas to deal with migrant workers. The present service in Bangkok should be overhauled and improved, and employers should be encouraged to notify vacancies, including skilled vacancies, on a wider scale. It is understood that intensive canvassing of employers in the past failed to bring in any vacancies, but if an improved service is made available, some employers might be expected to respond. There is, moreover, one line of development which should be surveyed: that is, a special placement service for vocational trainees and graduates of vocational institutions. Such persons should, in the capital area, be encouraged to register and active steps should then be taken to find employment for them. Employers would have to be made aware in most cases that they were not being offered the services of fully-skilled workers. This kind of activity would help to determine more precisely the relative needs for providing training facilities for different skills. There seems to be little possibility at present of rendering a similar service to trainees and vocational school graduates in the provinces, but something might perhaps be done in the eleven provinces where the Department of Public Welfare has its own officers. ILO expert assistance is available to the placement services.

An improved placement service with additional offices, appealing at the same time to a wider sector of job-seekers and dealing with a wider range of vacancies, and with a specialized section for university and higher school graduates would enable the labour market to clear itself more effectively.

The Bureau of Labour is responsible for a training center in Bangkok which provides two-year day courses for teenage boys and six-monthly evening courses for adults in engineering, woodworking, auto mechanics and radio servicing. This center is basically a welfare activity for the sons of poor parents, and the opportunities for some training of adults as incidental. The Bureau of Labour intends to send boys from the center in industry for intensified training, which will be a subsidized activity. The Bureau of Labour should also make itself responsible for certain other training activities: for example, it might undertake arrangements for selected foremen to take short theoretical courses in any available training institutions and for institutional trainees and students to spend short periods in industrial establishments in the course of their training or study. Employers should be encouraged to pay the wages of their personnel undergoing institutional training, but might receive payment from the State for making training facilities available in their establishments for trainees and students who are not their own employees. The Bureau of Labour could serve as the normal intermediary between industrial establishments and training institutions.

Employment Information

Every January and July since January 1959, the Labour Bureau has carried out a survey into employment and employment prospects in all undertakings with ten or more workers in Bangkok-Thonburi and publishes the findings as "Employment Market Information." The coverage includes government establishments and schools. The decision to survey only establishments having ten or more workers was made on the basis of the 1954 Demographic Survey, which indicated that such establishments probably did not exceed 2,000 in Bangkok-Thonburi and employed two-thirds of all wage and salary earners. "Ten or more Workers" is now interpreted to include "unpaid family workers" so long as they are regularly employed. Employers who drop below the ten mark in two consecutive surveys are eliminated from the lists, and efforts to locate employers reaching the ten mark for the first time are not altogether successful. Nor have results been very consistent. In July 1960, 1955 establishments were located employing 191,296 persons; in January 1961, 1,800 establishments with 199,052 persons; in July 1961, 1,699 with 203,100; in January 1963, 2090 with 234,252. It might be better if an establishment, once included in the lists, were retained there so long as it continued to operate, irrespective of size. Reports would then be in respect of same establishments each time, minus those which had closed since the last report, plus those newly opened or identified. An attempt should be made, in conjunction with the National Statistics Office, to estimate what proportion of the employment market within the area covered (which should be precisely delineated) is actually being surveyed.

The procedure for identifying new establishments needs overhauling, and this should be easier now that the employment information service is linked with the placement service. The general estimates of future employment and the identifying of obstacles to expansion should perhaps be discontinued as being beyond the capacity of temporary enumerators. On the other hand, whatever may be the difficulties, a serious attempt should be made in future to get reliable information about employers' future requirements in selected skilled occupations. The planning authorities should be invited to indicate any occupations in which they are interested. This part of the survey might with advantage be extended to the provinces: a questionnaire could be taken periodically by district administrators to the larger employers and contractors.

An attempt should be made to get information concerning labour turnover in the capital area. This might be done by devising additional questions at the six-monthly surveys, but if this proves unsatisfactory, a special inquiry should be undertaken.

Closer cooperation should be sought with the users of employment information, so as to relate it to what users feel they want. Publication should be on a selective basis designed to reach different groups of interested parties, e.g. planners and investors want to know the pattern and trends of employment; employers the availability of workers; workers the availability of jobs; and the Ministry of Education and other authorities who provide training facilities want to know the probable future demand for particular skills; and so on.

The Bureau of Labour needs to continue to publish, at frequent intervals, its own compilation of statistics and reports on the volume of placement and registration, on labour-management relations and inspection, and on related matters such as workmen's compensation. It should also continue to improve its surveys of wage levels and of earnings and hours. These are all part of "employment information."

ILO technical assistance is available to the Bureau of Labour in building up its employment information services.

National Standard Occupational Classification

The Bureau of Labour should take the leading part in preparing a national standard occupational classification. The Office of National Statistics has devised job titles in Thai from the ILO's International Standard Classification of Occupations (ISCO) and reduced them to four digits (a procedure which may make international comparisons difficult), and the Bureau of Labour has translated the ISCO three-digit titles and descriptions. A joint committee of the Office of National Statistics and the Bureau is now trying to fix Thai terminology for common use, but no field work has yet been done. It is imperative that field work should be started and the Bureau of Labour is equipped for doing this, through its placement, other services, and through the contacts which it has at all sorts of points with employers and workers. The Bureau intends in fact to make a start in selected industries in connection with its next wages survey.

F

Technical Planning
Office of the
Ministry of National
Development

Manpower Planning Activities in the Technical Planning Office of the Ministry of National Development

APPENDIX F

Manpower Planning Activities in the Technical and Planning Office of the Ministry of National Development

submitted by: Technical and Planning Office (MND)

Note: Following is a preliminary definition subject to review and confirmation.

Whereas the Ministry of National Development has been assigned a major responsibility for developing the infrastructure of the national economy in a sound and orderly manner, and since the execution of this responsibility requires the systematic and careful preparation, analysis and evaluation of infrastructure programs and projects from start to finish, it has been found necessary to create for this purpose a special Government agency within the Ministry, namely, the Technical and Planning Office.

This Office is responsible for advising the Ministry of National Development on all matters concerned with the planning, programing, evaluation, overall financing, execution, and coordination of economic infrastructure projects and other related activities falling within the purview of the Ministry. This requires close working cooperation with all departments and other branches of the Ministry of National Development, collaboration with the National Economic Development Board, and effective working relationships with other branches of Government whose responsibilities, programs, and activities relate to those of this Ministry, The Technical and Planning Office is responsible also for manpower development planning within the Ministry and for such other activities as may be assigned to it.

The Technical and Planning Office contains technical officers in various fields, e.g. economists and other social scientists, irrigation, power, highway, mining, sanitary, and other engineers, public administrators, manpower specialists, financial analysts, etc., who directly advise the Director or his Deputies. These technical officers or advisors are concerned with all substantive and technical questions pertaining to the planning, programing, financing, and implementation of development projects and activities for which the Ministry is held responsible. They review and evaluate the development proposals and projects submitted by other departments of the Ministry, including state enterprises under its jurisdiction, and by other Government agencies as may be required, and make recommendations as necessary to proceed, defer, alter, accelerate, terminate, or consolidate specific projects or activities, or otherwise to improve the effectiveness of the Ministry's program to develop the economic infrastructure on a sound basis. Their appraisal of programs and projects covers all technical aspects: economic, engineering, management and labor, organization, commercial, and financial. Their primary and most vital task is to advise the Director of the Technical and Planning Office on the economic and technical soundness, feasibility, and relative desirability and priority of all economic infrastructure programs and projects, current and proposed, consistent with resources available to the Ministry and in accord with the National Development Plan.

Serving the Director of the Technical and Planning Office, his Deputies, and his technical advisors, are five Divisions:

1. Office of the Secretary,
2. Program Division,
3. Project Analysis - Economic Division,
4. Project Analysis - Engineering Division, and
5. Manpower Development Division.

The Office of the Secretary contains a Documentation Section and a Finance Section which discharge administrative duties customarily associated with this Office. The principal responsibilities of the other four Divisions are briefly described below.

Functions of the Program Division

1. To undertake the review, analysis, and appraisal of infrastructure development programs and other development activities within the Ministry's responsibility in respect to their planning, general feasibility, timing, financing, relative priority, and other aspects;

2. To recommend improvements and other modifications as deemed necessary in program composition, project preparation, financing and completion, and other aspects of the Ministry's infrastructure development activities;

3. In collaboration with the Department of Technical and Economic Cooperation, to review the level, terms, and sources of foreign grant aid and loans, and the application of such external assistance to specific programs and projects of the Ministry of National Development; and, in collaboration with the National Economic Development Board, to assess the debt service requirements of proposed foreign loans and credits for program and projects of the Ministry in relation to the balance of payments and general economic prospects of the country;

4. To study the projects of other Ministries to determine their significance in relation to the program and projects of the Ministry of National Development.

5. To recommend ways and means for achieving close coordination and cooperation among all interested Government agencies within and outside the Ministry in regard to the planning and execution of programs and projects which depend on or are interrelated with those of the Ministry in order to enhance their contribution to the national economic development;

6. In addition to advising on current development policies and programs of the Ministry, to make recommendations on long-range infrastructure development objectives and plans;

7. To scrutinize all programs and projects of the Ministry with the view to anticipate bottlenecks and other difficulties likely to retard successful implementation and to recommend steps for detecting, avoiding, minimizing, or solving these problems;

8. To undertake necessary technical inquiries and studies for the purpose of obtaining and making available to the Ministry the most useful technical information and applied experience to help increase the efficiency and effectiveness of the Ministry's development operations;

9. To gather information on the status of the Ministry's development projects and to report and evaluate in physical and qualitative terms the progress made in implementing the Ministry's development program and objectives;

10. To prepare timely exhibits for display in the "Operations Room" on the scope, composition, and progress of the Ministry's programs of work and on the coordination of this work with other Ministries, utilizing audio-visual equipment, diagrams, charts, maps, graphs, table models and other means; and

11. To prepare statistical and other reports and publications covering the work performance of the Ministry.

Functions of the Project Analysis - Economic Division

To review, analyze, and appraise the economic aspects (including commercial features as applicable) of all development projects and proposals submitted by other departments of the Ministry, including :

a. The proper definition and description of the project and its relationship to other programs and projects within the Development Plan as presently conceived and likely to be extended in future years;

b. The domestic and foreign currency requirements of the project including recurring operations and maintenance costs and the availability of resources to meet those requirements;

c. The anticipated contribution or net benefits of the project to regional and national economic development both in the short-term and long-term;

d. The cost-benefit ratio of the project compared with the cost-benefit ratios of alternative projects of similar nature;

e. The relative priority of the project within the development program of the Ministry and within the Development Plan;

f. The feasibility and desirability of the commercial arrangements required to assure the success of the project including the need of the project for subsidy or protection upon completion; and

g. The degree of project preparation or readiness including essential market surveys and other important economic and commercial factors.

The Division will examine the assumptions behind all the estimates and projections presumed to justify the project on economic grounds.

Functions of the Project Analysis - Engineering Division

To review, analyze,and appraise the engineering features of all development projects and proposals of the Ministry, including :

a. The appropriateness of the scale of operations, operational techniques, location, etc.;

b. Any contemplated expansion, reduction, liquidation,or other modification of the project in future years;

c. The estimated total and annual costs for each stage of theproject, including operation and maintenance costs, and distinguishing between local currency and foreign exchange costs;

d. The estimated benefits of the project over time in quantitative terms:

e. The assumptions behind the cost and benefit estimates;

f. The work plan or time table, by months, for implementing the project from start to finish;

g. The extent of project preparation or readiness in respect to physical engineering, design, specifications, land acquisition, procurement, installation of equipment, supporting facilities (e.g. roads, water, power, housing), etc.; and

h. The progress of projects under way in relation to projected schedules and the adequacy of arrangements to secure prompt reporting of such progress, covering both financial expenditures and physical progress towards completion.

Functions of the Manpower Development Division

1. In cooperation with the National Economic Development Board, to make such investigations as may be necessary in regard to the existing relations between the manpower resources available to the Ministry for development projects, present and projected, and the manpower requirements of the Ministry as a basis for determining current imbalances and future needs;

2. To project, and revise as necessary, future development manpower requirements of the Ministry in specific occupational categories for each year of the Development Plan period, on the basis of proposed targets (.e.g., so many construction engineers. architects, surveyors, chemists, etc.);

3. To collaborate with other Government agencies, as may be required, in collecting manpower data and in evaluating existing and proposed programs and facilities for expanding the availability and improving the quality of manpower required by the Ministry for development projects;

4. To collaborate with other Government agencies in recommending modifications as may be necessary in existing training programs and facilities and in developing new programs to meet the specific manpower needs of the Ministry;

5. To cooperate with the National Economic Development Board and other agencies of Government in formulating manpower policies essential for building foundations for sound and constructive labor relations involving skilled, semi-skilled, and other personnel required by the Ministry for executing its present and future development activities;

6. To assist in developing necessary data for effective and prompt decisions on national manpower policies and their execution;

7. To coordinate all manpower programs within the Ministry and to provide other Departments within the Ministry with technical assistance on manpower matters as may be needed;

8. To identify priority areas for manpower policy and program actions within the Ministry (including manpower shortages, under-employment, etc.);

9. To review and evaluate the manpower utilization and requirements of existing and proposed development projects of the Ministry;

10. To initiate technical studies and research as required to carry out the manpower development responsibilities of the Ministry; and

11. To carry out all other tasks in the manpower field undertaken by or assigned to the Technical and Planning Office by the Minister or his Deputies.

Government Organizations for Manpower Planning

Office of the National Economic Development Board

Compiled by members
of Office of
the
National Economic
Development
Board

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APPENDIX G.

Government Organizations for Manpower Planning
Office of the National Economic Development Board

1. Introduction

The Department of Public Welfare, Ministry of Interior, in carrying out a study of labor problems came to realize the need for a manpower assessment program from the social welfare as well as economic development aspects, and entrusted the Labor Division with the responsibility of making such a program. When the Government decided to undertake systematic planning and to formulate the National Economic Development Plan, and came to realize as the result of the initiative of the said Department, the significance of manpower problems in economic development, the Council of Ministers decided, in June 1961, to establish the National Manpower Board with the Committee headed by the Minister of Interior and with the Labor Division as the secretariat.

Late in 1962 the NEDB and the Public Welfare Department held discussions on the Report on the Development of a Manpower Assessment Program prepared by A.G. Read, ILO Labor Consultant to the Department of Public Welfare and the Report on the Manpower Situation in Thailand by J. White, who was assigned by USOM in early 1962 to study and make recommendations on manpower assessment. It was mutually agreed that manpower assessment and planning as an integral part of national economic planning were major issues which involved government agencies as well as the private section. It was thus deemed appropriate to assign these tasks to a central government agency responsible for national economic planning. The Public Welfare Department was to be concerned only with labor administration. The NEDB was to be in charge of manpower assessment and planning.

Manpower problems and education development which are one of the most important elements in economic development are closely inter-related. Since the Government is short of specialists in these fields, a request was made to the U.S. Government to send a group of experts to assist the Government in making a preliminary assessment of Thailand manpower resources and education development in relation to the requirements for economic development and its educational goals.

2. Objectives

At present a team of three manpower specialists from A.I.D. is working jointly with the Thai personnel, consisting of representatives from various government agencies, to study the problems and the requirements of Thailand in the fields of manpower and education. One major duty of this working group is to make recommendations to the Thai Government for the establishment of appropriate machinery for manpower development and planning.

The NEDB has prepared this document to submit to the Joint Working Party. Advice from A.I.D. experts is sought in this connection.

3. Supplementary Documents

In preparing this working paper, the NEDB staff referred to following reports:

- Report to the Government of Thailand on the Development of a Manpower Assessment Program: by A.G. Read, ILO Representative, 1963 (work done during December 1961 and November 1962).
- General Note: by A.G. Read, ILO Representative.
- Report on the Manpower Situation in Thailand: by J. White, 1962.
- An Analysis of the Supply and Requirements of Scientific and Technical Personnel in Thailand during the first six-year Economic Development Plan, 1961-1966: by Vichitvong Na Pombhejara and Vijit Sangtong.
- Report on Education and Planning on National Labor (Thai): by Dr. Snoh Unakul, B.E. 2504 (1961).
- Report on Additional Opinions: of Dr. Snoh Unakul.

In addition, opinions have also been given by those who are working closely on this subject. The NEDB would like to take this opportunity to extend to them its appreciation for their assistance.

4. Principles -- Organization for Manpower Development and Planning.

As appears in the above mentioned documents, manpower development, planning and administration involve four major areas:

1) Manpower development planning.
2) Collection, study and analysis of statistical data and information on manpower.
3) Manpower administration.
4) Education and training.

At present, work in these areas is scattered among several government agencies without coordination or consistency. Therefore, in order to coordinate with the present organizational structure of Thai government agencies, the following principles are suggested:

4.1 Manpower Planning

It is appropriate that manpower planning be divided into two levels namely:

a. National level.

b. Other levels.

a. National level:

It is essential that there be a government agency serving as a central office charged with both short and long-range undertakings:

- To be responsible for coordination and integration of national manpower resources and development with planning for economic development.
- To advise the government on manpower policy, and on programs at the national and other levels, including the implementation of the programs.
- To advise ministries, departments, divisions of the government and private agencies on manpower problems.
- To promote collection, research, and analysis of statistical data and information on the various aspects of manpower resources.
- To assess and estimate manpower needs for economic development.
- To assess and estimate manpower supply; research and analyze the economics of education and the relationship between education and economic development plans.

It is definite that manpower development must be closely linked and consistent with national economic development. As we have seen, many economic development projects have failed, have not been fully accomplished or have been delayed, owing to the lack of qualified personnel at different levels to meet the manpower demand. Manpower planning must be an integral part of an economic development plan, especially a continuous and long-range plan. The assessment of manpower requirements and supply, the number of students to be educated or trained to meet the needs of development projects, as well as manpower planning, should be the duty of a central authority, since all the statistical data and information on manpower obtainable from various authorities must be analyzed and formulated into a manpower plan which will be tied in with the economic development plan. Therefore, a central office which is able to perform such work thoroughly and effectively in Thailand should appropriately be attached to NEDB.

b. Other levels: Other government agencies such as the various ministries and the National Statistical Office will also participate in manpower planning within the scope of work under the responsibility of each particular agency. In case there is any work involving other ministries, direct contacts may be made among themselves or may be made through NEDB as the central authority for manpower development planning and coordination.

4.2 Collection Study and Analysis of Statistical Data and Information on Manpower

The major part of this work should rest with the National Statistical Office which is responsible for statistical collection. Furthermore, there are other agencies, such as the Department of Health, Ministry of Public Health, which regularly collect and analyze statistics within their areas of responsibility. Requests may be made by the NEDB office for additional information or data on manpower from these agencies if need be.

4.3 Manpower Administration

a. Manpower administration is one of the important tasks to which special attention is called. Labor problems will become an increasingly significant issue as the economy expands. It closely involves manpower development and many other problems. These problems usually arise from industrial work force and manpower mobilization. Considering the industrial promotion policy of the Government, NEDB would like to suggest that all information on manpower activities collected should be assembled in a specific government agency responsible for extensive and effective labor administration.

b. This government agency should have departmental status and may be called the Department of Labor.

4.4 Education and Training

It is obvious that education and vocational training are of the greatest significance to the country's economic and social development. Such work may be divided into:

a. Formal Education
b. Apprenticeship and in-service training

4.4A Formal Education: Formal education is the responsibility of the Ministry of Education and the Prime Minister's Office (for higher education).

4.4B Apprenticeship and In-service Training: The training should be in two major areas:

a. That for the public sector should be the responsibility of the Civil Service Commission.

b. That for the private sector should be the responsibility of the Department of Labor.

The implementation of training programs call for a central office to:

a. Promote and improve qualifications.
b. Supervise and control.
c. Coordinate.

It is not the duty of this central office to execute educational programs or to undertake the operation for the implementation in any institution, but only to give advice and coordinate education, apprenticeship and in-service training, so as to assure consistency with economic and manpower development plans.

The agency which is appropriate for the assignment of this responsibility is the National Education Council, since NEC is principally responsible for national education policy.

5. Work Plan: In order to assure a smooth running of work in item 4 above, the suggestion is made to provide for manpower planning at the national level, which should be the center of all planning operations.

It is deemed appropriate to create in NEDB a unit which may be named the Office of Manpower Development and Planning with 3 or 4 divisions in it.

Since the manpower planning at the national level involves both the public and private sections, it is considered appropriate to have a committee established by the Council of Ministers as a sub-committee to the Executive Committee of NEDB. (See 4.1 for the scope of responsibility of the sub-committee.) This committee shall be called the "Sub-Committee on Manpower Development" with the Office of Manpower Development and Planning as its secretariat. Representation* to the committee should comprise:

1. Secretary-General of NEDB.
2. " " NSC.
3. " " NEC.
4. " " CSC.
5. Representative from Ministry of Interior.
6. " " Ministry of National Development.
7. " " Ministry of Industry.
8. " " Ministry of Agriculture.
9. " " Ministry of Communications.
10. " " Ministry of Education.
11. " " Ministry of Defense.
12. " " Public Employers.**
13. " " Public Employees.**
14. Office of the Manpower Development and Planning, NEDB Office (Secretariat).

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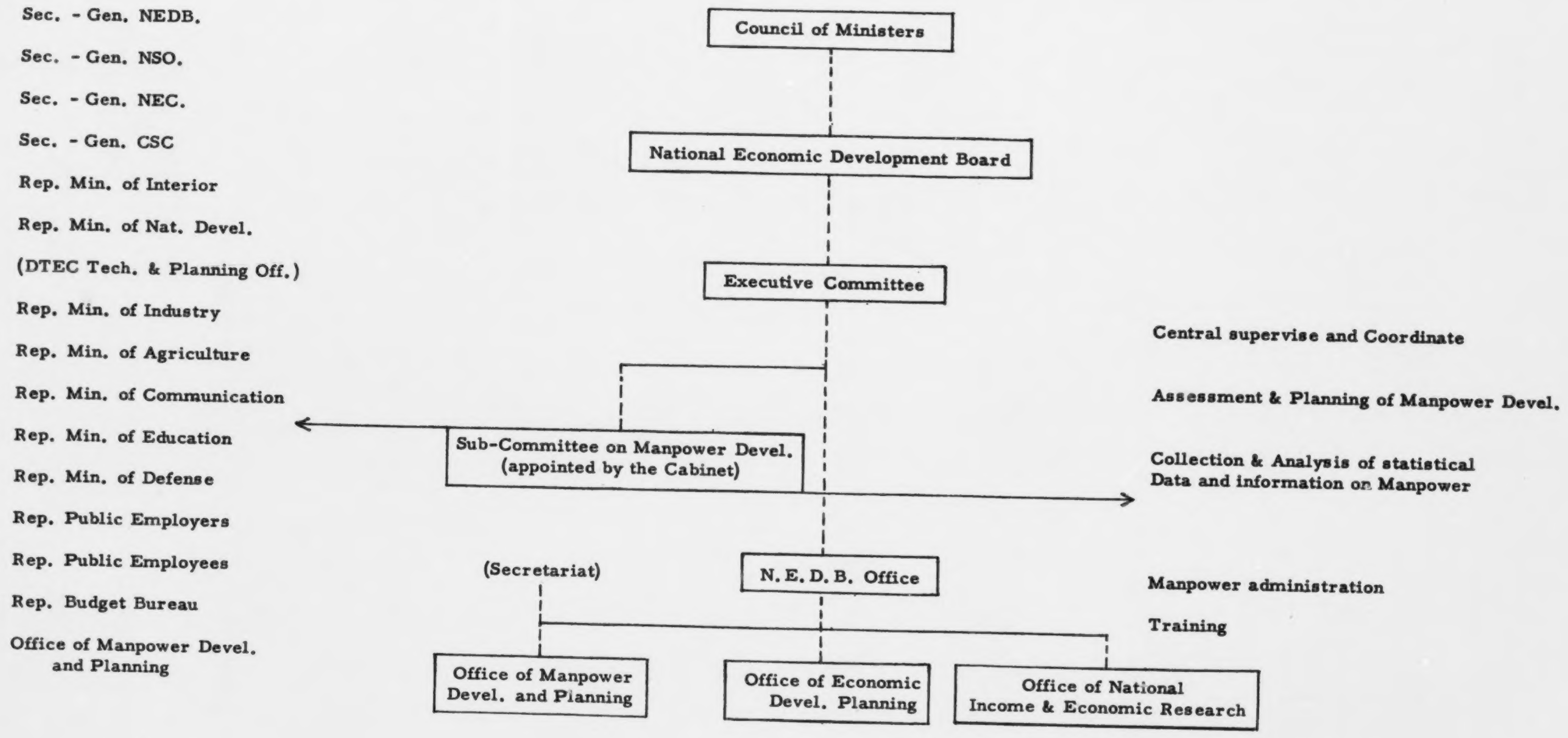
* Representatives from Ministries may be more than one if so desired.
**Representation from 12 and 13 will be included in due course.

Attached hereafter is an organization chart.

6. Conclusion: The preparation of this working paper makes an allowance for continuation of work after the termination of the Joint Working Party. Therefore, working arrangements thus proposed are intended to be simple and most practical so as to tie in with the existing organizational structure. Should the work expand in the future, working arrangements will change accordingly.

Organizational Chart for Manpower

Development Planning


Council of Ministers
National Economic Development Board
Executive Committee
Sub-Committee on Manpower Devel. (appointed by the Cabinet)
N. E. D. B. Office
(Secretariat)
Office of Manpower Devel. and Planning
Office of Economic Devel. Planning
Office of National Income & Economic Research
Sec. - Gen. NEDB.
Sec. - Gen. NSO.
Sec. - Gen. NEC.
Sec. - Gen. CSC
Rep. Min. of Interior
Rep. Min. of Nat. Devel.
(DTEC Tech. & Planning Off.)
Rep. Min. of Industry
Rep. Min. of Agriculture
Rep. Min. of Communication
Rep. Min. of Education
Rep. Min. of Defense
Rep. Public Employers
Rep. Public Employees
Rep. Budget Bureau
Office of Manpower Devel. and Planning
Central supervise and Coordinate
Assessment & Planning of Manpower Devel.
Collection & Analysis of statistical Data and information on Manpower
Manpower administration
Training

PART 2

WORKING PAPERS ON EDUCATION

EXPLANATORY NOTE

The working papers represent the cooperative efforts of many people, both Thai and American. Their names are found on the front of the chapters to which they contributed. Others, whose names may not appear here, made very substantial contributions and without their help the working papers, as well as the education portion of the main report, could not have been written.

We express our appreciation and name them. His Excellency, the Minister of Education, assigned nearly twenty Thai educators to the working teams, and has taken personal interest in the work. The Under-Secretary of State for Education, Mr. Abhai Chandhavimol, has given wise and continuing counsel. The Directors-General of the Departments were constructively helpful at all points: Mr. Bhunthin Attagara, Teacher Training; Mr. Sanan Sumitr, Secondary Education; Mr. Kriang Iamsakul, Elementary and Adult Education; and Mr. Bhongs Sakdi Varasundharosoth, Vocational Education.

The Director-General of Educational Techniques, Mr. Charoon Vongsayanha, gave masterful direction as the official Ministry of Education's counterpart for the Joint Task Force. Dr. Kaw Sawasdi Panish, Chief, Supervisory Unit, Teacher Training Department, was generous with his time and good advice.

On the USOM side, Dr. Frederic T. Shipp made sure that the work progressed through the staff, despite heavy loads of regular work. The task of providing technical help and coordination in the production of papers fell upon Mr. William G. Hart, who can take proper delight in the papers, without having to assume responsibility for the content.

A

Introduction

Dr. Cole S. Brembeck

INTRODUCTION TO THE WORKING PAPERS ON EDUCATION

Education and Social Welfare

Educational policy, as a part of national policy, usually has two main objects: to meet the demand of individuals for their own development, and to meet the needs of society for its general development. These two objects of educational policy, individual development and societal development, recognize that education serves many purposes, some of which are economic, others non-economic in nature. That part of education which transmits to children and young people the great traditions of their culture, religion and art, or transmits the values by which the society perpetuates itself is serving primarily non-economic functions. On the other hand that part of education which helps youth to develop its talents and skills for employment is serving a direct economic function. The economic and non-economic functions of education are frequently hard to separate, but it is generally recognized that those nations which would be both modern and free must include in educational policy provisions for enabling youth both to make a good living and a good life.

The Scarcity of Educational Resources

In meeting the two objects of education policy, that of meeting the needs of the individual and of society for its general development, governments face a number of critical problems. One of the most critical is that educational resources are very scarce, and must be spread widely. Therefore, the most effective use of them must be made.

It was for giving guidelines in this area that the Joint Thai-American task force was established to undertake a preliminary assessment of human resource and education development in Thailand.

Three Major Aspects of Human Resource and Education Assessment

An assessment of human resource and education development involves three major undertakings:

1. An appraisal of the present human resource situation by identifying major occupational groups of existing shortages, problems of unemployment or underemployment, and the projection of manpower needs to target dates.

2. An appraisal of plans for the development of formal education to meet the projected human resource needs, with particular reference to stated and assumed goals, the means to be employed to reach the goals, and the costs involved.

3. A harmonizing of educational plans with the human resource needs in order that the educational system can produce persons with the kinds of skills and aptitudes most needed for the country's social and economic development.

The working papers which follow are concerned only with number two, the education side of human resource development. They present the kind of data and information which are required in order to do a preliminary assessment of education and human resource development in Thailand.

Data Requirements for the Study

A good assessment of the role of education in human resource development requires three factors:

1. Accurate information and data,

2. Correct analysis and interpretation of the data, and

3. An understanding of the social and cultural context within which the educational system operates.

Six Areas in Which Data and Analysis were Needed

The following are the six substantive areas about which data and analysis were required in order to do the study. A great deal of the data was readily available from published reports of the Ministry of Education and other sources. In those areas where data was not readily available valuable assistance was given by the Ministry and other agencies in obtaining it. In some critical areas little or no data was available; nor could it be produced in the short time allocated to the study. In such instances these areas were marked for special priority in future plans.

1. The composition and structure of the student population, projected through the target date.

2. The composition and structure of the teaching force, projected through the target date.

3. An analysis of educational productivity and programs for the improvement of productivity.

4. A study of the role of vocational education in developing the economy of Thailand.

5. A preliminary study of the economics of education in Thailand, including an examination of methods for determining the economic contribution of education toward development, the kinds of educational investments required to achieve economic targets, and the cost of such investments.

6. An analysis of education development plans which are currently underway or which may be proposed for the future.

The data and analysis requirements for each of these six areas will be spelled out in some detail below, and will indicate in broad outline the kinds of data and information which are presented in the working papers:

Working Papers in the Six Areas

It was proposed to the Ministry of Education that working papers be prepared for each of the six areas set forth above. The proposal was accepted by the Ministry and the Minister assigned nearly twenty Thai specialists to the six working teams. The Thai were joined by ten Americans assigned by the Chief of the Education Division of USOM. It will be evident that the working papers are a joint effort to make available to the Joint Task Force the best data and information which could be obtained in the time of our disposal. Proper credits to the persons who produced the papers are given at the appropriate places in this volume. These papers were used by the Joint Task Force on education and human resource development as resource documents to guide the preparation of its final report and the recommendations dealing with the education sector. The interested reader will want to study these papers as the basic documentation on which the education portion of the report itself rests.

Content of the Working Papers

Since the substance of the six areas varies a great deal, so does the content of the working papers. However, it is also clear on closer examination that several of the six areas have elements in common, and data used in one area is valuable in understanding other areas.

Generally speaking the papers contain the following kinds of material, subject, of course, to the unique requirements of each substantive area.

1. The latest and most accurate available current data and information related to the topic.

2. Longitudinal data extending back five years or more, in order to indicate trends and changes.

3. Data projections through the target date, taking into account, wherever possible, the factors which modify the projections.

4. Commentary needed to make the data and information clear and understandable.

Interpretations and recommendations growing out of the resource papers are reserved largely for the main Joint Task Force report.

We now turn to an outline of the more detailed data requirements for each of the six substantive areas. As indicated above not all data called for was available to the working teams. The outlines of requirements are included here to indicate the over-all frame of reference in which the working teams operated, and, hopefully, to provide guidance to others who embark on similar studies.

The Composition and Structure of the Student Population

1. Current student population, by different levels and curricular areas, primary through the university, and ratios of each group to the total.

2. Student population at different levels and curricular areas projected through the target date and the ratio of each group to the total, taking into consideration:

- **a. Planned educational expansion.**
- **b. Population increase.**
- **c. Repeater ratios.**
- **d. Wastage.**
- **e. Natural expansion based on anticipated numbers of students proceeding to next levels.**
- **f. Other relevant considerations.**

3. The numbers of students leaving school at the several terminal points:

- **a. Primary.**
  - **(1) Fourth grade.**
  - **(2) Seventh grade.**
- **b. Secondary.**
  - **(1) Academic stream.**
  - **(2) Vocational stream.**
- **c. Technical.**
- **d. Universities and other institutions of higher learning.**
  - **(1) Physical and natural sciences.**
  - **(2) Medicine.**
  - **(3) Humanities and the arts.**
  - **(4) Teacher education.**
  - **(5) Social sciences.**

4. The ratio of graduates, or school leavers, who enter the labor force, compared to those who do not.

5. The number of graduates entering the economy each year from the "outside", having been educated in foreign countries.

6. The composition of the foreign educated group, by academic specialization.

7. Projected number of foreign educated students through the target year, by academic specialization.

8. Pass-retention (or failure) ratios.

a. By different levels of education, primarily through university.

b. By different geographical regions within Thailand.

c. In comparison to other selected nations in South and Southeast Asia.

9. Application-admission ratios.

a. By different levels of education.

b. By different academic streams, and vocational or professional areas.

10. Age-grade ratios.

a. By different levels of education.

11. Ratios between total population and total school age population, by years, from 1950, through the target date.

12. Ratios between total population and school attending population, by years from 1950, and projected through the target date, for:

a. Primary education.

b. Secondary education.

(1) Academic stream
(2) Vocational stream.

c. University and other institutions of higher learning.

(1) Physical and natural sciences
(2) Engineering
(3) Medicine
(4) Social sciences, humanities and arts
(5) Teacher education

13. The above ratios compared with other Asian countries according to levels of per capita income.

14. Ratios of students in public institutions to students in private institutions:

a. By different levels.

b. By different academic streams.

c. By vocational or professional programs.

15. The male-female ratios of the student population:

a. At different levels.

b. At the university and higher institution level.

(1) By academic streams, and vocational or professional programs, including teacher education.

The Composition and Structure of the Teaching Force

1. The present size of the teaching force by educational levels:

a. Primary education.

b. Secondary education.

(1) Academic stream.
(2) Vocational stream.

c. University and other higher education.

(1) Major academic streams.
(2) Vocational and professional programs.

2. The male-female ratio:

a. At different educational levels, academic programs and vocational streams.

b. In comparison with the male-female ratios of the student population at similar levels.

3. The size of the teaching force by different educational levels, viewed longitudinally from 1950.

4. The size of the teaching force by different educational levels, projected to the target date, taking into account:

a. Losses through death, retirement or other reasons.

b. Expected new inputs.

5. The loss ratios of teachers at different educational levels.

6. Actual service length of teachers at different levels of education - by sex.

7. The main sources of teacher supply and numbers for selected years by:

a. Type of institution.

b. Level of instruction.

8. The input-output ratios of each teacher training institution.

9. The percentage of teacher education graduates who actually enter the teaching profession:

a. By training institution.

b. By level of instruction.

10. The capacity of in-service training facilities for teachers by levels of education.

11. The percentage of use of in-service facilities using 100 as maximum.

12. The work load of teachers by different educational levels for:

a. Number of days taught per year.

b. Hours per school day.

c. Number of students.

d. Other instructional or non-instructional responsibilities.

e. In-service responsibilities.

13. The academic preparation of teachers at different educational levels in terms of:

a. Number of years' training, and kind.

b. Degrees, certificates, or diplomas.

14. The ratio of unqualified to qualified teachers at different levels of education.

15. In terms of the production of teachers:

a. How many university graduates does it take to produce one university teacher?

b. How many secondary graduates to produce a secondary teacher?

c. How many elementary graduates to produce an elementary teacher?

16. How many more university graduates will be required to produce the necessary number of university teachers through the target date?

17. How many more secondary graduates will be required to produce the necessary number of secondary teachers through the target date?

18. How many more elementary and secondary graduates will be required to produce the necessary number of elementary teachers through the target date?

19. In order to raise the secondary enrollment to that anticipated by the target date how much must teacher training facilities be increased?

20. In what kind of teacher training institutions should the increase come? That is, what is the most effective way to increase the number of teachers?

The Improvement of Educational Productivity

John Vaizey of the University of London has asserted that "on a very conservative estimate, it might be possible to raise educational productivity by at least a fifth just by a more rational use of existing resources."

Educational productivity depends, to a large extent, on two factors: (1) the quality of the educational product, and (2) the efficiency with which it is produced, in terms of the time and money expended. The actual identification of those factors which make for improved educational productivity, on either the quality or efficiency side, is not easy. Nor is it a simple matter to identify ways and means of improving educational production through higher quality and efficiency.

Still, there are compelling reasons for examining educational productivity. The investment of scarce educational resources dictates that they yield the largest possible return. If education is to contribute its full share to national development it must maximize the educational investment. For these reasons the working paper on the improvement of educational productivity examines those factors which relate most clearly to considerations of quality and efficiency and reduces them wherever possible to objective measurement. The following are some of the areas related to educational productivity:

1. Student productivity:

    a. The effectiveness of basic compulsory attendance laws.

    b. The promotion-failure ratios of students at all levels of instruction.

c. The examination system as a factor in encouraging or discouraging the improvement of quality education.

d. The work load of students.

e. The expenditure of student time as related to the achievement of educational goals.

f. The screening of students for admission as a factor in selecting those most capable of high educational productivity.

g. The content of the curriculum in terms of demands placed upon students.

h. The relevance of the curriculum to the attainment of real education goals, in contrast to passing examinations.

2. Teacher productivity:

a. Teacher holding power and turnover at all levels of instruction.

b. Teacher-pupil ratios at all levels of instruction.

c. Preparation by types of institutions, and trends.

d. Ratios of qualified to unqualified teachers at different levels.

e. Ratios of part-time to full-time teachers, especially in institutions of higher learning.

f. Trends in the quality of entrants to different types of teacher training institutions.

g. Participation trends in in-service programs.

h. Work load of teachers in terms of hours per day taught, and days per year, by levels of instruction.

i. Curriculum content of teacher education programs in terms of educational goals.

j. Teaching methods and practice related to achieving educational goals.

3. Educational facilities:

a. Classroom-pupil ratios at different levels of instruction.

b. Availability of instructional materials, by levels of instruction, provided by whom, and at whose expense? Trends in the availability of instructional materials.

c. Trends in the availability of library resources.

d. New school construction.

(1) Levels of instruction.
(2) Types of instructions.
(3) Trends.
(4) Correlated with population density.
(5) Public-private ratio of construction.

4. Educational finance:

a. Baht per pupil costs.

(1) Longitudinally since 1954.
(2) By levels of instruction.
(3) By academic streams, or vocational or professional programs.

b. Ratios of expenditures by levels of instruction, and trends.

c. Education budget - national budget ratios.

d. Ratios of expenditures among departments in Ministry of Education.

e. Ratios of capital to operational expenditures, longitudinally from 1954.

f. Estimated ratios of public to private expenditure, and observable trends.

g. Correlation of educational expenditure with the goals of the economic development plan.

The Role of Vocational Education

1. Enrollments and trends:

a. Longitudinal study of vocational enrollments for all levels.

b. Longitudinal study of enrollments by vocational school levels.

c. Ratios of vocational enrollments to other streams at similar levels.

d. Applications-admissions ratios at different vocational school levels.

e. Wastage at different levels.

2. Students:

a. Longitudinal study of qualifications of entrants at different vocational school levels.

b. Pass-retention ratios compared to parallel streams and levels.

c. What do follow-up studies or other data and information reveal about.

(1) Percentage of students who enter occupations for which they were trained.
(2) The transfer of skills to other jobs for which students were not specifically trained.
(3) Percentage of those who take positions unrelated to preparation.
(4) Nature of positions held for which there was no direct training. Do they require more skill? Less skill?
(5) Earnings of vocational education graduates compared to other persons with same years of training.
(6) Number of unemployed vocational school graduates.

3. Costs:

a. Baht per pupil operating costs at different instructional levels.

b. Baht per pupil operating costs at different levels compared with other comparable streams.

c. Baht per pupil capital costs at different instructional levels.

d. Baht per pupil capital costs compared with other comparable streams.

4. Teachers:

a. Qualifications of teachers by vocational school level by number of years training.

b. Average number of years service.

c. Teacher-pupil loads.

d. Work load in terms of.

(1) Number of teaching hours.
(2) Number of teaching days per years.

e. Salary levels compared to other ranks.

f. In-service training participation.

5. Curricula and programs:

a. Guidance, counseling and placement services.

b. Are programs geared to known industrial and business needs and requirements?

c. Are there demands for programs not now being provided, for example in business management, sales administration, refrigeration and air-conditioning, market research, packaging, etc.?

d. Are programs designed to equip students with specific skills or make them "trainable" on the job, or both?

e. Are programs being planned to training industrial trainers for carrying on on-the-job training?

6. Efficiency of vocational education in terms of:

a. Wastage.

b. Utilization of facilities.

c. Teacher-pupil ratios.

d. Cash ratios.

e. Student placement.

f. Quality of programs.

7. The demand for vocational education in terms of:

a. Preparation of jobs for which vocational education is now essential.

b. Requirements of specific industries, businesses, and government.

c. New requirements because of technological advance.

The Economics of Education in Thailand

In recent years there has been a marked increase of interest in the study of the economics of education. A number of qualified economists and educationists have turned their attention to education as an investment factor in economic growth, and have made progress in developing methods for the study of the economics of education. It has been determined that economic growth cannot be fully explained solely in terms of quantitative investments of capital, land, and labor. Some portions can be understood only in terms of the quality of the human resource input. Education, of course, has a bearing on the quality of human resources and is therefore a factor to be reckoned within economic growth.

Most important for our purposes here is the recognition that the economics of education can be a valuable tool in understanding the role of education in economic development, in planning educational programs for economic and social development, and in the allocation of educational resources. It would seem, therefore, that attention should be given to this matter.

The working paper in this area of necessity is limited to marking out a few of the dimensions of this important field, indicating possibilities for its use in Thailand, and suggesting ways of developing the economics of education as a useful tool in education and human resource development.

The development of the economics of education can be helpful in three aspects of educational planning for human resource development: investments in education, returns from investments in education, and the development of strategies for educational planning.

1. Investments in education:

    a. The total size of the investments in education.

    b. Investments by educational sectors.

    c. Investment ratios among the various education sectors.

    d. Ratio of educational investments to other development sectors outside education.

    e. Public-private investment ratios.

    f. Investment ratios among the various vocational and professional streams.

2. Returns from investments in education:

    a. Methods which may be employed for estimating the total return on the educational investment.

    b. Methods which may be employed for estimating the return from investment in particular educational sectors.

    c. Methods for estimating the amount of educational investment required to achieve a given economic growth target.

3. Strategies for educational planning:
   - a. Allocation of educational resources among:
     - (1) Primary education.
     - (2) Secondary education.
       - (a) Academic stream.
       - (b) Vocational stream.
     - (3) Higher education.
       - (a) Academic stream.
       - (b) Vocational and professional streams.
   - b. The student "mix".
     - (1) What proportion of the student population should have university level education?
     - (2) Intermediate training?
     - (3) Technical training?
     - (4) Academic studies?
     - (5) What proportion and what level should be educated abroad?
     - (6) Is there a need to have intermediate terminal university programs, short of the degree?

c. How can new techniques in education be best utilized to maximize the strategic services of a small group of highly trained personnel?

d. Is there a need to revise the incentive system in order to gear remuneration to positions of relative importance to the country's development, rather than to formal degrees and educational levels?

e. Should there be created intentionally at certain educational levels surpluses of trained people in order to spur development?

Education Development Plans

The function of educational planning is to apply systematic procedures for the purpose of:

1. Identifying alternative educational targets.

2. Supplying a basis for intelligent choices among alternatives, and

3. Making best use of the existing resources for the achievement of selected targets.

Educational planning is not an academic exercise; it is a tool to be used in order to develop the human resources of the nation to the highest level within the educational resources available.

Educational planning does not exist for itself alone. It must be a part of overall development planning, and the educational plan must be related to other sector plans associated with broad national plans. Education planning, then, considers the relationship of education to the social and economic environment of the country.

The actual process of planning itself must take into account the administrative conditions which prevail in Thailand and must be designed to operate effectively within these conditions. That planning process which is effective in one country will not necessarily be effective in another.

The working paper on educational planning in Thailand, therefore, takes into account these factors:

1. How educational planning and decision making are currently carried on.

2. The administrative units involved in planning.

3. How targets are arrived at.

4. The kinds of research data needed to carry on planning more effectively.

5. The kinds of administrative machinery which may be required to make educational planning more effective.

Since educational planning, as we indicated, is usually a part of overall planning, the process usually starts with an assessment of human resource needs and then moves to the education sector where determinations regarding meeting the needs must be made. More specifically these steps are involved:

1. Making projections about future manpower requirements by occupational classifications.

2. Converting occupational data into educational needs.

3. Establishing an inventory of educational facilities and outputs.

4. Assessing changes, both quantitatively and qualitatively, required to produce the numbers of trained persons required.

5. Making the necessary arrangements for assuring flows of students into needed areas and diverting flows from surplus areas.

6. Forecasting flows of students through the system from one level to another.

7. Studying the likely returns on alternative programs in education, assessing the per unit costs, and selecting those most desirable on the basis of educational and economic criteria.

Finally, it should be said that the working papers which follow were produced by busy people who had to carry their regular duties during the period of research and preparation. That they did not spare themselves in the face of heavy demands will be apparent to all who read the papers. Also apparent to those who read the main report will be the deep debt owed to them by the Joint Task Force on Education and Human Resource Development in Thailand.

B

The Composition and Structure of The Student Population

Dr. Sanoh Dharmgrongartma
Dr. Boonserm Weesakul
Dr. Gordon E. Holmgren

THE COMPOSITION AND STRUCTURE OF THE STUDENT POPULATION OF THAILAND

(PART I)

This section will describe in a general way the student population of Thailand in terms of its present, past, and likely future dimensions. The purpose of this description is to give both a panoramic and detailed view of the student population as it moves through the educational system. Attention will be given to the system's capacities, inputs, outputs, and its proportions and structure.

General Over View

Theoretically Thailand has a 9-5 school grade system. The first nine grades are devoted to elementary education with a pre-primary-kindergarten unit of two grades, lower primary grades 1-4, and higher grades 5-7. As the kindergarten-primary unit enrolls only 1% of the total number who enter primary, for practical purposes, this level is not an important force in the total educational process. The secondary has two divisions, lower grades 1-3 and higher secondary grades 4-5. The latter is known as pre-university 1 and 2.

Vocational and teacher training fields have definite relationships to the basic school system but are organized within their own structures and are described in the sections devoted to them. Higher education includes academic, professional, and technical trainings in the universities and similar institutions for three years for the diplomas and at least 4 years for a degree.

As the government has used certain terms to express specific levels and these have changed through the years, below is given a description of the educational levels with their changes.

LEVEL	SCHOOL GRADE	PAST DESCRIPTION	PRESENT DESCRIPTION
Elementary			
Lower	1-4	Pratom 1-4	Pratom 1-7
Upper	5-7	Matayom 1-3	
Secondary			
Lower	8-10	Matayom 5-7	Maw Saw 1-5
Upper	11-12	Matayom 8-9	

4,627,500 students representing 16% of the total population are taught in 28,000 institutions by a teaching staff operating on a 33 to 1 pupil-teacher ratio. Of the above numbered students 90% can be found in the elementary, 6% in the secondary, 1% in vocational, .4% in the teacher training schools, .9% in institutions of higher learning, and 1.3% in other schools which are largely private vocational, special, and mission schools.

Through the last twenty years enrollments in Pratom 1-4, where the basic compulsory attendance law is in effect, have increased at annual rate of 4% while secondary enrollments starting later have in the same period increased of an annual rate of 7%. Male-female ratios at the compulsory school attendance level compare favorably.

With this brief background which describes the educational system of Thailand as it appeared in 1962, a closer analysis will now be made, using data of 1961 as it is the most relatively complete.

Grade Structure-Drop Outs

Chart 1 dramatizes pyramidally the grade structure and shows vividly the extreme drop-out at Pratom 4 with a more mild but a consistent drop-out through the other levels of education.

The unusually high number of students at Pratom 1 and 2 reflects the high retention rates at these levels, a fact that has been emphasized and re-emphasized by past data analysis. An excellent treatment of the drop-out question and its relation to the school program recently has been done*. The heavy concentration of students at the pyramid's base gives emphasis to the fact that a fourth grade education appears to be the mode for the population of Thailand.

Chart 2 diagrams the approximate number of students that leave (drop-outs) the schools to enter the labor force in some form of a work status either as an employer, employee, or an unpaid family worker. As approximately 800,000 students enter the schools on any given year and 520,000 of these reach fourth grade, it can be said that each school group will produce 280,000 who have less than fourth grade education. This is by virtue of either a drop-out or a failure to enroll in any school. The chart too reflects the fact that approximately 80% of a would-be labor force have a maximum of fourth grade education.

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*Analysis and interpretation of educational statistics and enrollment projection -- Boonserm Weesakul, Research Division, Department of Educational Techniques, Ministry of Education, Bangkok, 1963.

The extent of drop-outs is expressed effectively in a study by Dr. Boonserm* in which he computes drop-out rates from observed and expected enrollments through a two year period. Charted below are these rates with an estimate where the necessary data is available:

DROP-OUT RATES - ACADEMIC STREAM

GRADE	Drop-Out Rate in Percentage of Enrollment
Pratom 2	12
" 3	5
" 4	6
Matayom 1	80
" 2	6
" 3	4
" 4	11
" 5	5
" 6	3
" 7	70
" 8	10

This pattern can be shown objectively by observing the student loss, as a unit of 1,000 individuals, passes through the school system (Chart 3). Again the points of drop-out are emphasized. The estimate of approximately 10% entering Matayom VII or second year of pre-university that was suggested in another paper may be questioned; it could possibly be affected by more liberal past policies. The apparent increase in student enrollment at Matayom 6 is an interesting phenomenon. Is this an affect of the retention policy or do older and more wiser students of this age come back to school?

Enrollment Trends

A cross sectional look at the secondary and higher education as they existed in 1961 is given in Chart 4. From the data given here relationships between various streams and movements within streams can be viewed.

It would appear from the trends at the lower vocational level that they are lacking in enrollments; this lack is of such a nature that grades of higher levels have more students than those of the lower. This kind of formation is the exact opposite of normal school growth cycles. Vocational enrollments at the 11th, 12th, and 13th year level are somewhat better yet appear stagnant; the technical schools have active, rising enrollments.

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* Ibid

The general stream moves at a rate which describes a policy of competitive promotions. Per cent of drop-outs from grade to grade are:

GRADE	% of Drop-Outs
from 8th to 9th	19
10	15
11	33
12	55

Years 11th and 12th of the teacher training institutions, experience a 38% drop-out from one year to the other with graduation from the two year course at grade 12. Many of the students in this class continue in school to become the 3rd year secondary teacher training students and they are progressing from grade to grade with a 10% fatality rate. School years 15 and 16 are the degree earning ones with no drop-out from year to year but with a per cent of re-enrollment at grade 16th.

School Leavers

The professional stream involves years 13 through 18. Here drop-outs cannot be computed as enrollment changes from year to year are due to graduations.

The matter of balance in percentage of enrolled students in the three streams of academic, vocational, and teacher training may now be considered. Below is charted a comparison in per cents which reflects their relationship in number. These percentages are compared with two other countries of this area.

COUNTRY*	GENERAL EDUCATION	VOCATIONAL	TEACHER TRAINING
Taiwan	70	27	3
Thailand	79	16	5
Viet Nam	96	3	1

*World Survey of Education Vol. III. Secondary Education 1961

It would appear that Thailand has a better balance in streams than has Viet Nam and comes closer to that of Taiwan which has reached a certain degree of technical advancement.

The Compulsory Attendance Law

Basic to any country's public school system is its compulsory school attendance law. The dimensions of the law and its effectiveness of execution will determine to what degree and extent a country constructs an intellectual foundation.

Compulsory attendance in Thailand starts from the age of 7 and continues until the child is 15 or terminates when he completes grade 4. School attendance must not be less than 160 days of 2 sessions each. Therefore, this school law also asks for a degree of attendance. Some children are exempted from school for a limited number of causes.

As methods for enumerating the number of children who are of school age appear to vary from one area to another, the matter of accurately determining to what degree the compulsory attendance law is effected demands attention.

Dr. Boonserm* in his study treats the subject of "completeness of enrollments" by computing percentages of enrollment by a comparison of tabulated enrollments by age groups against the expected numbers which is described in the 1960 National Census. He believes that the basic compulsory attendance law is approximately 90% effective.

The above discussed study prompts a further inquiry into the effectiveness of the attendance law. Assuming that all the 7-11 year olds should be in school,** one can compare the number described in the 1960 National Census with those reported on the Educational Statistics rolls. Tables 1a, 1b, 1c summarize the findings of this study by showing the ratios of attendance of each at the five age groups in each of the 12 regions. The range of attendance varies from a low of 67.97% in Region II to a high of 87.94% in Region III. It is of interest to note that both of these regions are located in the southern part of the country.

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* World Survey of Education Vol. III. Secondary Education 1961.

**Due to the high failure rate in the first 4 years of school, it has been estimated that an average child needs 5 + years to complete 4 grades.

PRIMARY AND SECONDARY SCHOOL ENROLLMENTS (PART II)

Educational developments can best be studied through an analysis of past enrollment data. The table* given below describes the elementary and secondary school growth over a twenty-year period.

SCHOOL ENROLLMENTS BETWEEN 1942-1961

YEAR	PRIMARY AND PRE-PRIMARY			SECONDARY		
	(000)	Average increase (000)	% Total Population	(000)	Average Increase (000)	% Total Population
1942	2,500	29	15.44	113.0	4.3	0.70
1943	2,609		15.72	119.5		0.72
1944	2,664		15.67	122.0		0.72
1945	2,589		14.88	100.1		0.58
1946	2,594	39	14.49	99.7	6.5	0.56
1947	2,551		13.86	96.7		0.53
1948	2,635		13.94	101.6		0.54
1949	2,745		14.15	117.3		0.61
1950	2,786		14.00	132.5		0.67
1951	2,843	79	13.80	153.8	35.5	0.75
1952	2,808		13.25	186.0		0.88
1953	3,053		14.00	211.7		0.97
1954	2,959		13.21	259.1		1.16
1955	2,982		12.91	309.9		1.34
1956	3,089	125	12.98	370.0	59.1	1.56
1957	3,220		13.14	415.4		1.70
1958	3,407		13.47	498.5		1.97
1959	3,477		13.32	560.6		2.15
1960	3,609		13.42	605.4		2.25
1961	3,761	152	13.53	646.7	41.3	2.33

*Analysis and interpretation of Educational Statistics and Enrollment Projection -- Boonserm Weesakul, Research Division, Department of Educational Techniques, Ministry of Education, Bangkok.

This growth is described in terms of raw data and percentage ratios to total national population. Combined absolute enrollments increased from two and one-half million to approximately four and one-half million, or an increase of about 70 percentage points, or an annual average increase of 2.6 per cent per year over the period. The irregularities which the primary enrollment quotients reveal can only be resolved by a consideration of such variables as (a) incomplete records (b) variable denominators (c) school policy changes and (d) such phenomena as political changes, international strife, and parental attitude.

Due to the many inconsistencies at the primary enrollment ratios in the first decade, a logical point for an analysis could be the year of 1955 where this ratio rested at an all-time low of 12.91. UNESCO's World Survey of Education Vol. II Primary Education gives the following percentages of enrollment computed on the 1954-55 school year for the following countries of Southeast Asia:

Country	Per cent of Total Population
Japan	14
Republic of China	13
Thailand	13
Federation of Malaya	12
Indonesia	8
India	6
Burma	6
Cambodia	6
Viet Nam	4

While this comparison is relative and subjected to many variables, it does aid in reflecting Thailand's efforts in the area of primary education.

With the exception of the war years, the secondary school enrollment increased in a methodical orderly fashion, increasing five-fold the absolute number and tripling the per cent of total population. Listed below are neighboring countries with their per cent of enrollments in the school year of 1954-1955*.

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*World Survey of Education, Vol. II. Primary Education, UNESCO, 1958

Country	Per cent of Total Population
Japan	7.0
Indonesia	1.8
India	1.7
Republic of China	1.4
Thailand	1.3
Federation of Malaya	1.1
Burma	.9
Republic of Viet Nam	.4
Cambodia	.1

Japan's stage of industrial and economic development is surely a corollary to her per cent of secondary school enrollment. This comparison gives perspection to Thailand's present ratio of 1.3.

For purposes of further analysis of the educational composition of this unit, reference is here made to Tables 2a, 2b which contain data from the years 1954 to 1962. As it was in the year of 1954, that primary enrollment quotients reached a low and then proceeded to rise in an orderly fashion, this specific year is a good focal point.

Percentage ratios in the academic stream show a regularity in the decreasing of the elementary proportions and in the increasing ratios of the secondary. As the kindergarten-pre-primary follow an irregular pattern, it would appear that this level of educational training is experiencing some obstacles in the way of policy, finance, and public and personal motivations. Vocational enrollments in general do not show a dynamic direction while the vocational teacher supply has held a regular position. This imbalance in pupil enrollment in the vocational schools and the students enrolled in vocational teacher training could create a condition of teacher over supply. Teacher training ratios for general education are of such values that they could indicate that Thailand must recruit an increased proportion of uncertified teachers to staff their schools.

A summary report of the per cent of total enrollment by levels of instruction is given in Table 3. Such a presentation established points for reflection of structural changes and is a means by which comparisons can be made with other developing countries.

Male-female Ratios

Male-female ratios as they relate to the total educational structure of Thailand are reviewed in Table 4. The computations given below compare the sex ratios as they existed in 1954 with those of 1962.

LEVEL	1954		1962	
	PER CENT OF			
	Male	Female	Male	Female
Kindergarten - Pre-Primary	52.3	47.7	52.5	47.5
Prathom 1-4	52.7	47.3	52.0	48.0
Prathom 5-7	67.7	32.2	60.5	39.5
M.S. 1 - M.S. 3	69.2	30.7	60.8	39.2
M.S. 4 - M.S. 5	68.2	31.8	59.0	41.0
Vocational	68.1	31.8	66.3	33.7
Teacher Training	56.3	43.7	52.5	47.5
University	77.8	22.2	73.6	26.4

Males begin with a slight advantage as the percentages of total general population are 50.1 male to 49.9 female but this advantage is immediately extended by the simple process of favoring the male over the female at the compulsory school enrollment level.

The sex changes from 1954 to 1962 are not extensive enough to be significant at the pre-primary level but from this level on there are definite changes in the male-female structure with gain credited to the females. Percentage points of gain are .7 in Prathom 1-4, 7.3 in Prathom 5-7, 8.5 points of gain in lower secondary, and 9.2 in upper secondary with less gains in vocational, teacher training, and university. Boonserm describes this change that exists in the secondary school enrollment movement, and predicts that by 1980 these percentages will have a 53 to 47 relationship.*

Additional Vital Data

This process of sex equalization which is active at all levels of instruction is a positive, constructive action which will strengthen the intellectual, technological foundation of this country.

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*Analysis and Interpretation of Educational Statistics and Enrollment Projection - Boonserm Weesakul, Research Division, Department of Educational Techniques, Ministry of Education, Bangkok, P. 16

Tables 6-13 give vital data concerning the composition of each grade of the elementary and secondary school enrollment from the year 1954. As age distribution was not available prior to the year 1958, Tables 7-9 and 11-13 of the above series give sex and grade distribution by ages. The addition of age distribution data in each grade is valuable information for with this factual material one can compute mean ages per grade, and trace age groups as they move through the school system. In his analysis of this data Boonserm* makes these statements: (a) Children go to school at younger ages than previously, (b) Girl pupils are on the average younger than boys, (c) Dropout rates can be computed by a comparison of the real age and the expected age. These dropout rates were used in Part I to emphasize school wastage.

Private U.S. Government Schools

The private school movement is of significance in the educational system of Thailand. Because of the great need for additional resources and capital to satisfy the educational needs, the private school as an educational institution has been encouraged by the government and is being depended on to play a certain and specific part in their present and future plans.

Table 3 presents the per cents of total enrollment that one finds at each level in the public and private schools. Where the government had taken the initiative in the kindergarten-pre-primary movement, it appears that private efforts will play a greater part in this activity in the future. The acute reduction in the per cent of public kindergarten-pre-primary schools in 1962 indicates a definite action on the government's part in decreasing their emphasis in the pre-school area.

In prathom I through 4 (grade 1-4), those grades that are included in the first and basic compulsory attendance law, approximately 7% of this group, were enrolled in private schools. A ponderable point for consideration is to what extent did this effort by parents ease the total school costs for the government for this particular group. As a comparable figure taken in 1962, nine years later, is 9%, it is apparent that this parent effort is on the increase rather than decrease.

Prathom 5 through 7 (grades 5-7), those upper elementary grades which are included in the new compulsory school attendance regulation, were serviced in 1954 by private schools to the extent of 57%. Through the years this public-private school ratio has moved each year closer to a one to one relationship and resulted in a 51 government to 49 private proportion in 1962. It is clear from evidence such as this that any plan to execute the new (1960) school attendance law at this level will have to involve the private schools and solicit their aid.

Secondary school children have been getting their instruction from both public and private schools in about equal proportions. Through the years the tendency has been to move from a majority 5,670 in government schools, to an almost one to one relationship.

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*Ibid

Teacher training and higher education is received largely, if not totally, through government facilities. Vocational schools are mostly public but there are (here the data is not available) a sizable number of vocational and trade schools operated by private interests in such areas as commercial, arts and crafts, hair dressing and beauty culture, and specialized fields of business and industry.

Pupil-Classroom Ratios

Adequacy of physical facilities can be expressed in terms of pupil-classroom ratios. As a classroom is generally defined as a room of 54 sq. meters, these ratios have further definitive value of permitting school authorities to describe their building facilities in pupil-sq. meter relationships. A 30 to 1 ratio can also be described as 1.8 sq. meters of floor area per pupil.

Table 14 presents, with a degree of completeness, pupil-classroom ratios from 1954 to 1962 at levels of instruction and by kind of institution.

At the kindergarten-pre-primary level the private schools offer substantially less crowded facilities. As the current trend is far less government involvement at this level, it is well that the private schools have a degree of space to facilitate the expected enrollments.

Ratios in the basic primary grades, 1 through 4, average 35 in the first, 30 in the second 27 in the third, and 23 in the fourth. The private schools are characterized by higher ratios at each of these respective levels. From these findings two statements can be made (a) the lower the level of instruction the greater the ratio and (b) private classrooms are more crowded than government.

In the upper primary, grades 5, 6 and 7, government ratios run consistently higher than private, and longitudinally through the years, both institutions have decreased their ratios. A point for deliberation here is: are these decreases, results of more classrooms or have these ratios been improved by the decreased enrollments in these grades in the last few years?

Government ratios are higher than private at the lower secondary level but this pattern is reversed of the senior high or the pre-university. These ratios give emphasis to the fact that higher levels of instruction become a greater responsibility of private interests. Ratios at the teacher training level average 34 and 35 at the certificate and degree level. The diminishing ratios in the vocational training area reflects the well-known and previously mentioned weak enrollments in latter years.

The following computations show classroom and square meter ratios by level and kind of institution, public or private. It is from such information that the Ministry can establish standards for future school construction.

RATIOS/LEVELS	CLASSROOM		SQUARE METER	
	Govt.	Private	Govt.	Private
Kindergarten - Pre-primary	29	23	1.9	2.3
Lower Elementary	29	32	1.9	1.7
Upper Elementary	36	32	1.5	1.7
Lower Secondary	37	28	1.5	1.9
Pre-University	31	34	1.7	1.6
Teacher Training	35	-	1.5	-
Vocational	29	Incomplete	1.9	Incomplete

Pupil-Teacher Ratios

The data for pupil-teacher ratios by level of instruction through the years is incomplete. Further, many variables due to change in policy decisions, changes in definition, etc. are found operating in these statistics. Recognizing the inconsistencies one might suggest from the data these trends and conclusions:

a. Classroom ratios are higher than pupil-teacher ratios at every level but early elementary.

b. The highest pupil-teacher ratios are found at the elementary level.

c. As there is not a 1 to 1 relationship between classroom and teacher ratios, it would appear that more than one teacher is assigned to a room. This departmentalization begins at the later elementary level.

d. Above the elementary level there is a tendency for the private schools to have higher ratios. This is only clear-cut at the upper secondary level.

FUTURE SCHOOL ENROLLMENTS

PART III

Many countries over the world, including Thailand, are experiencing population explosions. The population projections for Thailand through four 5-year periods, supplied by the National Economic Development Board, give population statistics of 32 million for 1965, 37 for 1970, 43 in 1975, and 49 in 1980.

These trends will be used as maximum determinants in making future projections. Further, the number of seven year olds, that group that should be entering the schools for the first time, is obtained from a paper which reports on the work of Das Gupta, et al, Halvor Gille and Thip Chalothorn*. They predict that in this age group there will be 960,000 children by 1965, 1,113,000 by 1970, 1,240,000 by 1975, and 1,300,000 by the target date, 1980. Such startling but vital demographic information will be considered in all of the projections described.

The Department of Elementary Techniques in the Ministry of Education has made a series of projections based upon supportive assumptions at each level of education. As these were recently and capably done by Dr. Boonserm, they will be reviewed and used in this paper.

Primary Projections

The first level or group to be given consideration is that group known as the lower primary which includes grades 1-4. This group is peculiar in itself because theoretically all of its members should be in school. The only natural controlling factor related to projections for this group is the size of the birth cohort or the per cent of population increase year by year.

It is possible to make projections by various methods based on described and defined assumptions. First, past data can be reviewed and a rate of growth can be established, and this particular rate can be continued to infinity. Since past enrollment data in the early primary averages a yearly increase of 142,000 students, Projection I, shown in the following table, is based on this linear law of growth.

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*Das Gupta, et al, Halvor Gille and Thip Chalothorn, The Demographic Outlook of Thailand and Some Implications, Private Circulation.

PROJECTED PRIMARY SCHOOL ENROLLMENT

YEAR	PROJECTION I (000) CONSTANT RATE OF INCREASE	PROJECTION II (000) COMPOUND RATE OF 4 p.c.
1962	3,844	3,850
1963	3,986	4,004
1964	4,128	4,164
1965	4,270	4,331
1966	4,412	4,504
1967	4,554	4,684
1968	4,696	4,871
1969	4,838	5,066
1970	4,980	5,269
1971	5,122	5,480
1972	5,264	5,699
1973	5,406	5,927
1974	5,548	6,164
1975	5,690	6,411
1976	5,832	6,667
1977	5,974	6,934
1978	6,116	7,211
1979	6,258	7,499
1980	6,400	7,799

This particular projection, moving forward propelled by its constant, predicts that there will be 6,400,000 students in the lower primary, grades 1-4. As this projection assumes that no other factors will affect its movement, it is not surprising to find that these 6 million enrolled students almost equals the estimated 1980 number of individuals which are found in the age group 7 through 11. This age group is normally found in five school grades rather than in 4. This fact, however, only emphasizes the inadequacy of a prediction that allows for no consideration for changes in school policy.

The second projection, justified on the basis that population increases geometrically, would appear to reach too high a point with its 2 million students in excess of the predictions.

A method of projection, apparently borrowed from demographers, identified as cohort tracing, is now applied. This method forecasts future enrollments by means of survival and failure ratios that have been computed from past data and then, in turn, used to describe and predict future enrollments. It assumes that the composition of any Grade x in the year t is of two groups, those who were passed and those who were retained the previous year. A drop-out factor to adjust the number of initial enrollees is used when computing the projection for the first grade. Using a population projection of Gille that assumes a constant fertility rate of 45 per 1,000 and a moderately defined mortality rate, and the examination pass rates that are described in the next table, three additional projections are presented.

EXAMINATION PASS RATES USED FOR

YEAR	PROJECTION III				PROJECTION IV				PROJECTION V			
	P.1	P.2	P.3	P.4	P.1	P.2	P.3	P.4	P.1	P.2	P.3	P.4
1961	64.6	78.9	82.1	90.6	64.6	78.9	82.1	90.6	64.6	78.9	82.1	90.6
1962	64.6	78.9	82.1	90.6	67.0	81.0	85.0	92.0	70.0	82.0	87.0	93.0
1963	64.6	78.9	82.1	90.6	70.0	84.0	88.0	94.0	80.0	86.0	90.0	95.0
1964	64.6	78.9	82.1	90.6	70.0	85.0	90.0	95.0	90.0	90.0	93.0	95.0
1965	...	do	...	...	...	do	...	...	...	do	...	...
		.				.				.		
		.				.				.		
		.				.				.		
1975	...	do	...	...	...	do	...	...	...	do	...	...

The controlling variable in each of these projections is the pass rate. Projection III assumes that there will be no change in the promotion-retention policy and that pass rates will remain constant. This particular projection parallels the linear growth one with a slight increase as the target date is reached.

Projection IV is based on a policy that improves the pass rate in the next 4 years but then becomes fixed. This projection is probably more realistic since the Ministry of Education has already encouraged a more liberal policy toward this situation; however, it is rather unlikely that the government would find it constructive to halt the trend at the year 1964.

The assumptions of the 5th projection appear to be the most reasonable. If this projection were followed, the primary school enrollment would drop from its present high in 1961 of 3,702,000 to 3,656,000 in 1965. Whether or not the pass rates should be scaled up so sharply in such a short period of time, that is should the pass rate be increased 10 percentage points each year and then held at 90% at the year of 1964, might be a matter for close consideration.

While this would be purely a matter of arbitrary determination, it would appear that a slower pace to a higher determinant might be more advisable. The suggested program of this projection would surely relieve the congestion. However, one must ask: would the educational system be able to adjust to the new and different problems which would be created? Reference to this question has been made in the past, and a policy of non-retention has been largely justified on the basis of financial savings. As educational quality is usually accompanied by increased costs, this justification could be questioned.

Chart 6 graphically describes the real enrollments up to 1961, and the routes of the three projections in each of the primary grades. Clearly suggested here is that any action upon Pratom I has a counter but softened effect upon each of the following grades. The table below is a comparison of what the enrollments in each grade would be like in 1980.

Grade Population Projection	STUDENT POPULATIONS - 1980 (millions)			
	Pratom 1	Pratom 2	Pratom 3	Pratom 4
III	2.20	1.60	1.40	1.20
IV	2.00	1.50	1.30	1.15
V	1.60	1.40	1.30	1.20

If Projection V were followed the year 1980 would have 5.5 million students distributed proportionately through the primary grades. Surely this grade structure is more normal than that found in the other two projections. Theoretically, the differences as shown should really not exist since these children are specifically those who should be in school, according to the basic primary compulsory school attendance law.

EXTENSION OF THE COMPULSORY ATTENDANCE LAW

Future Enrollments Pratom 5-7

The National Scheme of Education which was planned in 1960 and put into effect in 1961 included a proposal to extend compulsory education in Pratoms 5-7. To begin the activation of this program, a project was begun in the school year of 1963-1964 which attempted to increase the grade enrollments in 394 of the 5,000 tambols in the Kingdom.

As this program is one that involves thousands of students and therefore millions of baht, any attempt to implement it must be based on a staggered, well thought-out plan. Projections show that by the years 1971 and 1979, 830,000 and 1,130,000 students respectively will have to places in the school system. The above figures result from a computation of the number of Pratom 4 graduates, the possible drop-outs, and Pratom 5 repeaters. Two suggested programs are then given, one a 10-year program with an annual increase of 69,500 students; a second, an 18-year program, assumes an annual increase of 49,700 students. Applying these rates to calculate expected enrollment in Pratom 5 as a base, Pratom 6 and 7 enrollments can be computed by assuming certain survival percentages, 92 per cent from Pratom 5 to 6 and 94 per cent from 6 to 7, in any given year. Tabulated below are projected enrollments by individual grades and by program.

EXPECTED ENROLLMENTS IN PRATOM 5, 6, 7

YEAR	I. Expansion 18 Year Program				II. Expansion 10 Year Program			
	Pratom 5	Pratom 6	Pratom 7	Total	Pratom 5	Pratom 6	Pratom 7	Total
1962	135,000	120,000	113,000	368,000	135,000	120,000	113,000	368,000
1963	184,700	128,300	112,800	425,800	204,500	128,300	112,800	445,600
1964	234,400	169,900	120,600	524,900	274,000	188,100	120,600	582,700
1965	284,100	215,600	159,700	659,400	343,500	252,100	176,800	772,400
1966	333,800	261,400	202,700	797,900	413,000	316,000	237,000	966,000
1967	383,500	307,100	245,700	936,300	482,500	380,000	297,000	1,159,500
1968	433,200	352,800	288,700	1,074,700	552,000	443,900	357,200	1,353,100
1969	482,900	398,500	331,600	1,213,000	621,500	507,800	417,300	1,546,600
1970	532,600	444,300	374,600	1,351,500	691,000	571,800	477,300	1,740,100
1971	582,300	490,000	417,600	1,489,900	760,500	635,700	537,500	1,933,700
1972	632,000	535,700	460,600	1,628,300	830,000	699,700	597,600	2,127,300
1973	681,700	581,400	503,600	1,766,700				
1974	731,400	627,200	546,500	1,905,100				
1975	781,100	672,900	589,600	2,043,600				
1976	830,800	718,600	632,500	2,181,900				
1977	880,500	764,300	675,500	2,320,300				
1978	930,200	810,100	718,400	2,458,700				
1979	979,900	855,800	761,500	2,597,200				
1980	1,029,600	901,500	804,500	2,735,600				

As Thailand is presently fulfilling by approximately 90% its basic compulsory law in Pratom 1-4, a point of interest is to what degree would the proposed new program be effective? The table which follows gives the combined Pratom 1-7 enrollments, the assumed size of the 7-14 age group, and the enrollment rates in per cent.

ENROLLMENT RATE (PRATOM 1-7)

(a) 10 Year Program

YEAR	Enrollment (000)			Population 7-14 Year of Age (000)	Enrollment Rate Per Cent
	Pratom 1-4	Pratom 5-7	Pratom 1-7		
1960	3,570	366	3,936	5,438	72.4
1965	4,081	772	4,853	6,728	72.1
1970	4,602	1,740	6,342	7,988	79.4
1972	4,878	2,127	7,005	8,548	81.9

(b) 18 Year Program

1960	3,570	366	3,936	5,438	72.4
1965	4,081	659	4,740	6,728	70.5
1970	4,602	1,351	5,953	7,988	74.5
1975	5,294	2,043	7,337	9,382	78.2
1980	5,921	2,736	8,657	10,580	81.8

Moving into the project of compulsory school attendance in 1960 with 72.4 per cent of the 7-14 age group in school, Thailand could hope to reach an approximate 82 per cent enrollment rate in either a 10 or 18-year period, depending upon which program it chooses to effect.

LOWER SECONDARY PROJECTIONS

(Maw Saw 1-2-3, Grades 8-9-10)

Building on a base that has given a projected enrollment of 900,000 students in Prathom 5 in 1980, with assumed survival ratios of 92 and 94 per cent respectively in Prathoms 6 and 7, the upper primary will have a great block of students who will be seeking entrance into the lower secondary, or grades 8-9-10. This is the area of educational development where fundamental skills are more permanently established and applied. Further, the student's intellectual foundation is broadened, strengthened, and deepened in preparation for a termination to his formal academic training, or preparation for higher learning.

Projections for this level can only be directed by the recognition of two major controlling factors: (1) past projected enrollments in the lower primary which recognizes the demographic and survival factor and assumes a high per cent of enrollment because of its obligatory nature, and (2) the willingness of government officials to emphasize education for Thai youth at this level.

Three projections are given for this level. Basically, each is an extension of the primary but they take different courses by their relationship to arbitrarily imposed pass rates. Each projection initiates a course from the 1961 pass rate of 19 per cent and then moves forward at the respective rate increases at .75, 1.21, and 1.63 per cents. Tabulations for each projection through the year 1980 are shown in table 15. Projection I would start with a student body of 20 students, survivals of a unit of 100, and would increase by three-fourths of one per cent per annum until a survival ratio of 33 out of 100 students is reached in 1980. Projection II moves forward on a more liberal pass rate, arriving at the 33 out of 100 ratio in 1973 and reaching a 40 out of 100 proportion in 1980. The third suggested projection is of such nature that by 1980, fifty out of every 100 students would be enrolled in Maw Saw 1 or Grade 8.

These projections are graphically shown in Chart 7. Each is independent in its direction, and above and beyond the line which described the present trend. The enrollment increases have astronomical qualities, for by 1980 Projection I will have increased 3 fold, Projection II 4 fold, and Projection III would have five times the 1961 enrollment in schools. Even the enrollment increase according to the present trend would more than double the school population in Maw Saw 1-3 by 1980.

UPPER SECONDARY PROJECTIONS
Maw Saw 4-5, Grades 11-12

Upper secondary level, known as Maw Saw 4 and 5, are grades composed of selected students that have survived competitive examination at three different levels, pratom 4, pratom 7, and Maw Saw 3. To emphasize the facts of drop-out due to a variety of conditions, the respective enrollments of the year 1961 for the grades concerned are here given:

Maw Saw 3 (10th grade) = 66,496
Maw Saw 4 (11th grade) = 22,091
Maw Saw 5 (12th grade) = 12,638

Into this academic stream flow a group of selected individuals who are known as pre-university students. These pursue two different courses, the science and the arts. The proportion of students in these areas are three to one in favor of the science. This group is of a special importance to the economic development of Thailand for it is the source of future professionals.

Table 16 suggests four projections and each of these contain three intra-projections for individual grades and one for combined grades.

The linear trend projection assumes constant growth based on performance. Its enrollment growth over the last years has been sharply pointed upward. This projection moves rapidly forward from a total of approximately 45,000 enrolled students to a five-fold increase by 1980.

Projections I, II and III are projections which are continuations of the projections which were made for the lower secondary grades of Maw Saw 1-3. These projections begin their movement from the pass rate ratio which existed in 1961 between Maw Saw 3 and 4.

Reference is made to Charts 8 and 9 where the projections have been graphed. Chart 8 describes the course of each of the Maw Saw 4 projections. The projections which are related to the lower secondary school begin slowly, below the linear trend, but gain momentum with projection III surpassing the trend projection at the year 1971.

While Projection I, II and III have at early periods 10,000 or more less students enrolled than the linear trend projection, they move forward with the exception of Projection I to points beyond those of the linear trend. This delay is apparent by virtue of attention to demographic phenomena and past retention promotion rates of the early primary. As all projections, primary through secondary, in this study are related, they take on the characteristics in modified degrees of preceding projections. Whether or not these projections are practical for immediate use is a relative question. However, they move toward maxima that are concerned with the demographic needs and the delay could give opportunity, in terms of time, for educational authorities to prepare for the enrollment demands of later dates.

Chart 9 describes the projected enrollments of the last grade at pre-university. The enrollment trends of the four projections follow similar patterns to those of Maw Saw 4. Enumerated below are the enrollments of years 1966 and 1980 as determined by each projection and the estimated Maw Saw 5 graduate requirements of the Man Power Survey Team:

YEAR	LINEAR TREND	PROJECTION I	PROJECTION II	PROJECTION III	ESTIMATED GRADUATE REQUIREMENTS
1966	32,264	22,946	23,768	24,515	32,182(1) 39,238(2)
1980	86,136	65,687	80,999	104,835	38,304(3) 76,269(4)

(1) Economic Demand, Educational Attainment Constant

(2) Economic Demand, Educational Attainment Upgraded, 2 per cent.

(3) Economic-Occupational Demand, Educational Attainment Constant.

(4) Demographic Demand, Educational Attainment Upgraded.

None of the projections meet the 1966 requirements. The current trend projection comes the nearest to satisfying the expressed need of about 32,000 graduates but falls far short when one applies the existing pass rate of 60 per cent in 1961 to the number of Maw Saw 5 enrolled students. If this per cent of pass rate is continued, Maw Saw 5 would have to contain about 60,000 enrolled students in 1966 in order to net 32,000 graduates. It would appear that a more liberal passrate in the future would be more constructive to Thailand's economic development.

With a more liberal pass rate all of the projections would meet the economic-occupational demands of 1980. Projection II and III enrollments would range within the demand requirements of the most ambitious target, that which was described as meeting the "demographic demand with educational attainment upgraded."

UNIVERSITY PROJECTIONS

Year 1961 had approximately 7,000 pre-university graduate students seeking entrance to institutions of higher learning. Of the number who applied, 20% were accepted. Such a group of beginning university students is composed of able, highly-selected students.

Table 17 supplies longitudinal data through a nine year period on university students and graduates. Graduates are those who have either earned a degree after four years of study or have graduated with a diploma and have had less than four years of training.

Chart 10 graphically shows the absolute number of degree graduates and diploma graduates through year 1962. Projections based on "line of best fit" show the possible number of graduates through 1980. Their fields of study, and their real and predicted enrollments are shown in Chart 11. Table 19 shows the actual linear-trend predicted enrollments by degree, diploma, and by five faculties: natural science and engineering, humanities and arts, medicine, agriculture, and education.

A comparison will now be made at future years 1966 and 1980 between the estimated university graduate needs as suggested by the Man Power Survey Team and two additional projections (1) Thai Government Projection (Table 18) and (2) a projection which is based on the linear trend over a nine-year period.

NUMBER OF UNIVERSITY GRADUATES

YEAR	MANPOWER NEEDS PROJECTION	GOVERNMENT PROJECTION	LINEAR GROWTH PROJECTION
1966	1,248(1) 1,957(2)	2,550	3,372
1980	2,983(3) 20,435(4)	4,125	6,424

(1) Economic Demand, Education Attainment Constant.
(2) Economic Demand, Education Attainment Upgraded.
(3) Economic-Occupational Demand, Education Attainment Constant.
(4) Demographic Demand, Education Attainment Upgraded.

Government needs in 1980 come very close to the projection based on the natural trend in the science and engineering field. The linear trend would produce 17,000 graduates in excess of the predicted need in the humanities and arts while in the faculty of medicine an excess of 1,000 would be realized in 1980. Agriculture graduates following the present rate of development would have in this same year an excess of one-third of the number suggested by the Thai Government.

A comparison of these two projections shows in general a degree of relationship with the exception of the humanities. It would appear that at present there are more people educated in the liberal arts and law than the demand calls for. In the A.I.D. publication The Forecasting of Manpower Requirements specific reference was made to common elements of the manpower problem. One of these problems was the tendency of developing countries to become oversupplied with graduates in the liberal arts field.

CONSIDERATIONS GROWING OUT OF THIS WORKING PAPER

It is in the area of primary education that a nation's interest and efforts need to be focused. As a country develops industrially and technically, it can gain constructive benefits only if its people are able to contribute manpower that have the ability to learn the necessary technical skills needed to man machines, and have the intellectual foundation that will enable them to use constructively the results of machines.

Public school systems with their accompanying compulsory attendance laws are efforts by a nation to create for itself a literate population or an intellectual human base. A population that, as a daily experience, reads, writes, keeps records, and computes is a population that is literate in the only acceptable sense.

Primary education because of its importance and magnitude of dimension needs the constant and undivided attention of educational authorities. It is a movement that saps the economic strength of an undeveloped nation, but primary education must be financed, for nowhere will a nation receive more for its money. Investment in primary education for the educational development of Thai youth is an investment that has no rival in terms of its return.

In consideration of primary school importance a continuous and keen evaluation should be constantly in effect. As it involves millions of human beings and determines their educational future, what appear to be minor problems and irregularities can be in realty very major issues that have multiple reactions on a country's development.

To better review the adequacy of a primary school program that is moved forward by compulsory school attendance law, attention should be given to the following operative elements:

a. Make an inquiry into the mechanics of assessing the number of children of school age. A question which needs answering is how efficient is the present method of obtaining a school census? An up-to-date school census is a vital necessity in order to evaluate the enforcement of the compulsory school attendance law, to reveal the number of children who will enter school for the first time and report on any unusual characteristics of this group, to ascertain the nature and scope of educational services needed in an area, and to provide basic data for educational planning.

b. Make an investigation of the attendance practices in schools. Since enrollment figures only express a simple child-school relationship, there is a need for ratios that describe student work input as it relates to school attendance. Every day of school absence, increases the per pupil costs and disturbs a child's educational program.

c. Determine what additional measures can be used to an advantage to measure work input as number of days of actual school instruction in relation to the number of days that school is in session. Further, assess the degree to which teachers are effectively being used by computing workload figures that reflect number of class periods being taught per year.

d. Adopt a means by which educational progress can be measured and thereby compared with past achievements. This can best be done by the use of ratios, i.e., pupil-teacher, pupil-baht, pupil-square meter, pupil-pass rate, etc. Establishing a pupil-square meter figures by regional area would pinpoint the building needs of deficiencies.

e. Establish standard tests in the skill subjects, the reading and writing of the mother tongue and numbers, so that educational authorities can better evaluate the progress being made in the teaching of fundamentals. Such standard scales could be utilized to determine policies of promotion and retention.

f. Give careful consideration and analysis to policies of promotion and retention. A policy of improved promotion becomes economically effective only when the resulting product has quality. To merely recommend a more liberal promotion policy is to disregard critical elements that must be considered if the policy is to be constructive.

A more liberal policy of promotion or one of total promotion creates problems and situations which are quite different from those which result from a restricted policy, for the former creates situations where higher grades will contain students who are at every level of learning, beginners and the most advanced.

If more liberal policies of promotion are adopted, attention must be given to the following if this action is to be constructive.

1. Course of study. There should be scientific analysis of the skill subjects that are to be taught, and outline guides prepared. Instruction becomes more constructive when fundamental principles or elements of a language or a number system are determined.

2. Structure of the primary curriculum. The principal purpose of the primary school is to teach the child the basic skills, the skills which are necessary to get additional learning and to continue on into other fields of study. Educational authorities need to consider the extent to which the course of study in early primary grades should be concerned with the teaching of these skills. Thailand now devotes a total of 10 hours to the teaching of the mother tongue and arithmetic.

A question one might now consider is how does this allotment of time to these areas compare with the average allotments throughout the world. Below are given the highest, lowest and average number of hours of instruction per week in 18 selected countries in the language arts and arithmetic.(1)

	Hours Devoted to	
	Mother Tongue	Arithmetic
Thailand	7	3
18 Countries of the World	11.2	3.6
Highest	$17\frac{1}{4}$	6
Lowest	5	$1\frac{1}{2}$

From these tabulations, it would appear that countries usually devote four or more hours in excess of the seven which Thailand has given to the development of its mother tongue. The three hours per week for arithmetic seems to be quite consistent with other countries.

An evaluation of the school day's program would also be constructive. In terms of the laws of learning and the nature of learning skill subjects, what is the most profitable arrangement of periods of study? It is generally believed by educators that if two hours of language arts are to be taught in a day, it is more constructive to have them spaced than to treat them as a block.

3. Instructional materials. Instructional materials based on the above outlines are necessary tools. Scientifically constructed textbooks with accompanying work books, tests, and enrichment materials for each of the fundamental skill areas should be made available. Further, if a skill is to have purpose, there must be opportunities for practice and application. Students will only learn to read well when they have had an opportunity to read and to continue reading. This last point cannot be emphasized too strongly.

4. Teaching method. Teachers of skill subjects must be intimately familiar with the construction of the skill they are to teach and what is the most constructive and most economical way of teaching this skill. Emphasis in teacher training should be on the "how" to teach and methods based on the laws of learning should be practiced. The development of the most effective teaching method and techniques should be a particular concern of the educational authorities.

5. Closely allied with method is the organization of the structure of a teaching unit. A teaching unit must have a flexibility that will allow for the teaching of any phase of the fundamental skills of any grade level. Homogeneous grouping of students for instructional purposes

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(1) The Primary School Curriculum - Robert Dottrene, Monograph of Education, Unesea, 1962, pp. 104-105.

needs exploration and consideration.

6. Philosophy of Education. The strengthening of curriculum, the improvement in the quality of teacher supply, the development of more effective teaching method, and a greater abundance of instructional materials may not serve the child or the nation effectively unless educators and teachers have certain philosophic beliefs to guide their actions and give direction. A nation that involves itself in a public school system must accept the responsibility for having guiding precepts for education which are consistent with the nation's large goals.

All units of structure must have foundations and the quality of a foundation determines the permanency and strength of the body which the foundation supports. The educational foundation of a country is not an exception to this assumption. One can then say that the future of a country's educational development is directly dependent on its base which is a product of the primary school.

THE COMPOSITION AND STRUCTURE OF THE STUDENT POPULATION

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STUDENT POPULATION - TABLE 1a

Measurement of the Effectiveness of the Basic Compulsory Attendance Law

When Two Sets of Age Group Data are Compared

AGE GROUP	REGION I			REGION II			REGION III			REGION IV		
	1960 Census	1960 ED.ST.	%	1960 Census	1960 ED.ST.	%	1960 Census	1960 ED.ST.	%	1960 Census	1960 ED.ST.	%
7 year olds	98,944	71,847	72.61	23,996	10,772	44.89	61,282	43,457	70.91	17,838	12,660	70.97
8 year olds	93,755	86,805	92.58	21,579	13,989	64.82	55,892	54,752	97.96	15,912	14,907	93.68
9 year olds	85,960	83,002	96.55	18,639	14,643	78.56	49,934	49,805	99.74	14,059	13,860	98.58
10 year olds	85,913	77,711	90.45	18,204	13,398	73.59	51,982	47,473	91.32	13,447	12,447	92.56
11 year olds	77,877	63,366	81.36	15,877	12,383	77.99	48,199	38,461	79.79	12,781	9,913	77.56
% Averages			86.71			67.97			87.94			87.07

* See total - Table 1d.

STUDENT POPULATION - TABLE 1b

Measurement of the Effectiveness of the Basic Compulsory Attendance Law

When Two Sets of Age Group Data are Compared

AGE GROUP	REGION V			REGION VI			REGION VII			REGION VIII		
	1960 Census	1960 ED.ST.	%	1960 Census	1960 ED.ST.	%	1960 Census	1960 ED.ST.	%	1960 Census	1960 ED.ST.	%
7 year olds	52,698	39,299	74.57	58,054	43,319	74.61	86,463	60,166	69.58	91,317	58,728	64.31
8 year olds	49,842	49,025	98.36	53,170	50,782	95.50	79,251	72,892	91.97	83,582	71,743	85.83
9 year olds	47,405	46,165	97.38	50,086	48,784	97.40	72,120	70,540	97.80	71,105	66,911	94.10
10 year olds	47,381	41,046	86.62	50,304	42,643	84.77	76,235	62,535	82.02	74,482	60,370	81.05
11 year olds	42,312	29,802	70.43	44,716	29,698	66.41	62,912	48,047	76.37	63,073	48,252	76.50
% Averages			85.47			83.74			83.55			80.34

* See total - Table 1d.

STUDENT POPULATION - TABLE 1c

Measurement of the Effectiveness of the Basic Compulsory Attendance Law

When Two Sets of Age Group Data are Compared

AGE GROUP	REGION IX			REGION X			REGION XI			REGION XII		
	1960 Census	1960 ED.ST.	%	1960 Census	1960 ED.ST.	%	1960 Census	1960 ED.ST.	%	1960 Census	1960 ED.ST.	%
7 year olds	78,514	59,891	76.28	98,255	75,087	76.42	107,346	75,219	70.07	48,596	33,634	69.21
8 year olds	74,840	72,626	97.04	89,841	87,243	97.10	102,795	97,374	94.72	44,952	44,050	97.99
9 year olds	64,988	69,538	100	83,508	87,172	100	89,434	90,876	100	42,287	41,342	97.77
10 year olds	70,669	62,423	88.33	90,009	79,130	87.91	95,054	83,532	87.87	41,728	36,446	87.34
11 year olds	58,596	44,830	76.50	78,026	50,652	64.91	82,045	62,687	76.40	37,388	27,879	74.56
% Averages			87.63			85.27			85.81			85.37

* See total - Table 1d.

TOTAL OF STUDENT POPULATION - TABLE 1d

Measurement of the Effectiveness of the Basic Compulsory Attendance Law

When Two Sets of Age Group Data are Compared

AGE GROUP	TOTAL		
	1960 Census	1960 ED.ST.	%
7 year olds	823,303	584,079	70.94
8 year olds	765,411	716,188	93.56
9 year olds	689,522	682,638	99.00
10 year olds	715,408	619,154	86.54
11 year olds	623,802	465,968	74.69
% Averages			84.94

STUDENT POPULATION - TABLE 2a

Description of the Educational Structure of Thailand by Level of Instruction

YEAR	TEACHER TRAINING GENERAL										Total for all Teacher Trng.	University	OTHERS
	Provincial Teach.Cert.	Lower Elem. Teach.Cert.	Elem. Teacher Cert.	Cert. in ED.	Sec. Teacher Cert.	Higher Cert. in ED.	Diploma in ED.	Bachelor in ED.	Master in ED.	TOTAL			
1954	149	1,836	2,469	61	494	-	-	68	-	5,077	5,852	21,129	35,800
	0.00	0.06	0.07	0.00	0.01			0.00		0.15	0.18	0.64	1.08
1955	32	-	1,985	2,659	335	-	-	284	-	5,295	5,786	24,588	51,303
	0.00	-	0.06	0.08	0.01			0.01		0.15	0.01	0.72	1.50
1956	-	-	2,389	4,634	367	-	568	247	-	8,205	9,081	28,662	23,109
			0.07	0.13	0.01		0.02	0.01		0.23	0.25	0.80	0.65
1957	-	-	1,184	6,599	242	840	727	521	-	10,113	11,272	33,713	47,014
			0.03	0.17	0.01	0.02	0.02	0.01		0.27	0.30	0.89	1.24
1958	-	-	128	8,980	284	1,733	659	838	-	12,622	13,684	46,612	59,187
			0.00	0.22	0.01	0.04	0.02	0.02		0.31	0.33	1.14	1.45
1959	-	-	-	11,401	177	2,779	597	959	-	15,913	17,161	45,448	73,856
				0.27	0.00	0.07	0.01	0.02		0.38	0.40	1.07	1.74
1960	-	-	-	11,484	51	3,231	883	1,811	-	17,460	18,848	39,260	58,949
				0.26	0.00	0.07	0.02	0.04		0.40	0.43	0.89	1.34
1961	-	-	-	11,214	-	3,153	666	824	15	15,872	17,158	40,893	71,969
				0.24		0.07	0.01	0.02	0.00	0.35	0.37	0.89	1.57
1962	-	-	-	11,810	-	3,467	682	861	33	16,853	18,087	42,013	60,463
				0.26		0.07	0.01	0.02	0.00	0.36	0.40	0.91	1.31

STUDENT POPULATION - TABLE 2b

Description of the Educational Structure of Thailand by Level of Instruction

YEAR	Total Students Absolute & Percent	GENERAL EDUCATION			VOCATIONAL						TEACHER TRAINING VOC.		
		Kindergarten Pre-primary	Elementary	Secondary	Short Course Voc.	Lower Voc.	Upper Voc.	Higher Voc.	Tech. Level	TOTAL	Elem. Teacher Cert.Voc.	Sec. Teacher Cert.Voc.	TOTAL
1954	3,318,410	21,282	3,113,966	82,919	-	19,302	12,020	5,332	808	37,462	704	71	775
	100	0.64	93.84	2.50		0.58	0.36	0.16	0.02	1.13	0.00	0.00	0.02
1955	3,417,627	29,294	3,162,517	100,091	-	20,455	15,867	7,154	572	44,048	491	-	491
	100	0.86	92.54	2.93		0.60	0.46	0.21	0.02	1.29	0.01		0.01
1956	3,567,533	31,460	3,303,511	124,009	-	18,356	18,324	10,225	796	47,701	657	219	876
	100	0.88	92.60	3.48		0.51	0.51	0.29	0.02	1.34	0.02	0.01	0.02
1957	3,784,110	32,010	3,458,934	144,950	-	17,582	20,645	15,603	2,387	56,217	825	334	1,159
	100	0.85	91.41	3.83		0.46	0.55	0.41	0.06	1.49	0.02	0.01	0.03
1958	4,087,221	37,606	3,685,771	181,804	-	13,623	22,580	22,875	3,479	62,557	646	416	1,062
	100	0.92	90.18	4.45		0.33	0.55	0.56	0.09	1.53	0.02	0.01	0.03
1959	4,240,366	39,605	3,784,993	213,402	1,191	6,944	24,812	28,728	4,226	65,901	783	465	1,248
	100	0.93	89.26	5.03	0.03	0.16	0.59	0.68	0.10	1.55	0.02	0.01	0.03
1960	4,394,378	39,057	3,935,549	239,409	3,749	2,613	23,267	28,790	4,887	63,306	881	507	1,388
	100	0.89	89.56	5.45	0.09	0.06	0.53	0.66	0.11	1.44	0.02	0.01	0.03
1961	4,592,990	45,605	4,092,922	270,756	1,923	666	16,880	29,327	4,891	53,687	684	602	1,286
	100	0.99	89.11	5.89	0.04	0.01	0.37	0.64	0.11	1.17	0.01	0.01	0.03
1962	4,627,508	37,180	4,136,134	287,330	2,478	341	11,183	26,692	5,607	46,301	483	751	1,234
	100	0.80	89.38	6.21	0.05	0.01	0.24	0.58	0.12	1.00	0.01	0.02	0.03

Source: Department of Educational Techniques Educational Statistics 1954 - 60
" " 1961 - 62

STUDENT POPULATION - TABLE 3

Ratio of Students by Level of Instruction and by Kind of Institution, Private and Public

YEAR	TOTAL	ELEMENTARY								SECONDARY						Tchr. Trng.	Voc.	Univ.	OTHERS
		Kind/Pre-prim.		P.1 - P.4		P.5 -P.7		TOTAL		M.S.1-M.S.3		M.S.4-M.S.5		TOTAL		Govt.	Govt.	Govt.	
		Govt.	Private	Govt.	Private	Govt.	Private	Govt.	Private	Govt.	Private	Govt.	Private	Govt.	Private				
1954	100	.29	.35	82.27	6.26	2.36	2.95	84.92	9.56	1.25	1.03	.11	.10	1.36	1.13	0.18	1.13	0.64	1.08
1955	100	.48	.37	79.94	6.45	2.73	3.41	83.15	10.23	1.41	1.30	.12	.09	1.53	1.39	0.01	1.29	0.72	51,303 1.50
1956	100	.53	.36	79.00	6.61	3.21	3.69	82.83	10.66	1.62	1.59	.14	.13	1.76	1.72	0.25	1.34	0.80	0.65
1957	100	.50	.35	77.90	6.73	3.52	3.63	81.92	10.35	1.76	1.77	.15	.08	1.91	1.85	0.30	1.49	0.89	1.24
1958	100	.55	.37	75.59	6.84	3.93	3.81	80.07	11.02	1.94	2.13	.19	.19	2.13	2.32	0.33	1.53	1.14	1.45
1959	100	.56	.45	73.89	7.18	4.22	3.97	78.67	11.51	2.13	2.38	.31	.22	2.44	2.60	0.40	1.55	1.07	1.74
1960	100	.50	.38	73.90	7.33	4.32	4.00	78.72	11.71	2.31	2.55	.33	.26	2.64	2.81	0.43	1.44	0.89	1.34
1961	100	.50	.49	73.77	7.15	4.23	3.95	78.50	11.59	2.48	2.67	.33	.42	2.81	3.09	0.37	1.17	0.89	1.57
1962	100	.21	.60	74.27	7.23	4.03	3.86	78.51	11.69	2.76	2.67	.31	.47	3.07	3.14	0.40	1.00	0.91	1.31

STUDENT POPULATION - TABLE 4

Ratio of Pupils by Level of Instruction and Sex

Year	Total	Kind/Pre-Prim		P.1 - P.4		P.5 - P.7		M.S.1-M.S.3		M.S.4-M.S.5		Vocational		Teach.Train.		University		Others
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
1954	100	11,117 .34	10,165 .31	1,547,782 46.64	1,389,962 41.89	119,601 3.60	56,621 1.71	52,401 1.58	23,311 .70	4,897 .15	2,310 .07	25,443 .77	12,019 .36	2,848 .09	2,361 .07	16,413 .49	4,716 .14	35,800 1.08
1955	100	15,330 .45	13,964 .41	1,558,104 45.58	1,394,614 40.80	139,768 4.09	70,031 2.05	63,642 1.86	29,152 .86	4,903 .14	2,394 .07	30,599 .90	14,320 .42	2,691 .08	2,441 .07	19,037 .56	5,551 .16	51,303 1.50
1956	100	16,528 .46	14,932 .42	1,607,244 45.05	1,450,271 40.65	160,782 4,51	85,214 2.39	77.963 2.19	36,620 1.03	6,170 .17	3,256 .09	33,078 .14	14,623 .41	4,543 .13	3,843 .11	22,061 .65	6,601 .19	23,109 0.65
1957	100	16,595 .44	15,415 .41	1,667,933 44.08	1,520,530 40.18	173,624 4.59	96,847 2.56	88,952 2.35	44,559 1.18	7,331 .19	4,108 .11	39,174 1.04	17,043 .45	5,480 .14	5,792 .16	25,775 .68	7,938 .21	47,014 1.24
1958	100	19,858 .26	17,748 .22	1,761,021 43.09	1,608,082 39,34	199,595 4.88	117,073 2.86	108,232 2.65	58,023 1.42	9,899 .24	5,650 .14	45,300 1.11	17,257 .42	7,006 .17	6,678 .16	34,216 .84	12,396 .30	59,187 1.45
1959	100	20,560 .48	19,045 .45	1,798,956 42.42	1,638,876 38.65	215,046 5.07	132,115 3.12	122,325 2.88	68,697 1.62	13,931 .26	8,449 .20	45,692 1.08	20,209 .48	8,830 .21	8,331 .20	34,582 .82	10,866 .26	73,856 1.74
1960	100	20,473 .47	18,584 .42	1,865,611 42.45	1,703,984 38,78	224,522 5.11	141,432 3.22	133,831 3.05	79,423 1.81	14,734 .34	11,421 .26	43,479 .99	19,827 .45	9,779 .22	9,069 .21	28,800 .66	10,460 .24	58,949 1.34
1961	100	24,992 .54	21,613 .47	2,019,695 43.97	1,834,328 39.94	146,568 3.19	92,331 2.01	146,276 3.18	89,968 1.96	20,506 .45	14,006 .30	36,207 .76	17,480 .37	9,111 .20	8,047 .18	30,352 .66	10,541 .23	71,969 1.57
1962	100	19,656 .42	17,524 .38	1,911,353 42.38	1,809,955 39.11	220,600 4.77	144,226 3.12	152,666 3.30	98,570 2.13	21,282 .46	14,812 .32	30,774 .67	15,527 .34	9,509 .21	8,578 .19	31,128 .67	10,885 .24	60,463 1.31

STUDENT POPULATION - TABLE 5

Description of the Educational Structure of Thailand in Percent of Total by Levels of Education

Year	Total Enrollment	Percent of Total Enrollment						
		Elementary	Secondary	Vocational	T.T.	University	Others	Total
1954	3,318,410	94.48	2.5	1.13	.18	.64	1.08	100
1955	3,417,627	93.40	2.93	1.29	.17	.72	1.50	100
1956	3,567,533	93.48	3.48	1.34	.25	.80	.65	100
1957	3,784,110	92.26	3.83	1.19	.30	.89	1.24	100
1958	4,087,221	91.10	4.45	1.53	.33	1.14	1.45	100
1959	4,240,366	90.19	5.03	1.55	.40	1.07	1.74	100
1960	4,394,378	90.45	5.45	1.44	.43	.89	1.34	100
1961	4,592,990	90.10	5.89	1.17	.37	.89	1.57	100
1962	4,627,508	90.18	6.21	1.00	.40	.91	1.31	100

STUDENT POPULATION - TABLE 6

Sex and Grade Distribution of Pupils Enrolled in Elementary Grades

Year	Sex	Pupils by Grade										Total
		Preliminary	Kindergarten 1	Kindergarten 2	P.1	P.2	P.3	P.4	P.5	P.6	P.7	
1954	M	3,735	4,692	2,688	650,320	362,072	296,318	239,072	49,846	38,939	30,816	1,678,498
	F	3,444	4,183	2,540	583,384	322,015	267,051	217,512	24,454	18,430	13,737	1,456,750
1955	M	6,571	5,229	3,530	648,390	360,878	305,590	243,246	56,437	46,178	37,153	1,713,202
	F	6,396	4,989	2,579	582,499	324,296	268,942	218,877	29,430	23,299	17,302	1,478,609
1956	M	7,760	5,138	3,630	651,823	397,687	314,906	242,828	61,622	52,911	46,249	1,784,554
	F	7,125	4,244	3,563	569,069	358,709	291,142	321,351	34,554	27,904	22,756	1,550,417
1957	M	7,518	5,283	3,794	658,865	414,054	331,996	253,018	66,232	58,414	48,978	1,858,152
	F	7,287	4,665	3,463	588,485	377,297	309,035	245,713	38,655	32,694	25,498	1,632,792
1958	M	9,280	6,173	4,405	676,959	439,294	355,593	289,175	78,276	64,366	56,953	1,980,474
	F	8,876	5,442	3,430	604,766	398,310	333,651	271,355	47,184	38,031	31,858	1,742,903
1959	M	9,671	6,779	4,110	682,441	444,709	373,276	298,530	82,582	71,619	60,845	2,034,562
	F	9,233	5,872	3,940	612,405	401,903	340,991	283,577	52,403	43,993	35,719	1,790,036
1960	M	8,591	7,282	4,600	702,817	460,868	389,681	312,245	84,022	74,096	66,404	2,110,606
	F	8,071	6,388	4,125	633,704	419,166	358,131	292,983	53,828	46,954	40,650=	1,864,000
1961	M	8,639	9,326	6,026	693,837	494,007	409,070	339,232	83,549	77,181	69,387	2,190,254
	F	8,161	7,970	5,483	629,018	453,978	379,746	318,081	53,505	49,004	43,227	1,948,273
1962	M	1,750	10,469	7,437	667,930	502,348	440,355	350,720	80,261	71,467	68,872	2,201,609
	F	1,562	9,252	6,710	611,115	461,690	406,157	330,993	52,952	47,103	44,171	1,971,705
TOTAL	M	63,515	60,371	40,220	6,033,382	3,875,917	3,216,785	2,578,066	642,827	555,171	485,657	17,551,911
"	F	60,155	53,005	35,833	5,414,445	3,517,364	2,954,846	2,410,442	386,965	327,412	275,018	15,435,485
"	MF	123,670	113,376	76,053	11,447,827	7,393,281	6,171,631	4,988,508	1,029,792	882,583	760,675	32,987,396

STUDENT POPULATION - TABLE 7

Age, Sex, and Grade Distribution of Pupils Enrolled in Elementary Grades in 1959

Age	Sex	Pre-Prim.	Kdgn. 1 & 2	P.1	P.2	P.3	P.4	P.5	P.6	P.7	Total
5 & below	M	4,872	9,356	1	-	-	-	-		-	14,229
	F	4,781	8,356	5	-	-	-	-		-	13,142
6	M	4,799	1,533	93,723	4,343	311	26	-	-	-	104,735
	F	4,452	1,456	85,455	4,088	375	33	-	-	-	95,859
7	M	-	-	234,068	38,027	4,758	338	-	-	-	277,191
	F	-	-	219,566	39,074	4,976	393	-	-	-	264,009
8.	M	-	-	192,396	124,103	29,842	4,815	582	20	3	351,761
	F	-	-	174,638	121,704	31,531	4,948	623	71	-	333,515
9	M	-	-	90,882	127,266	91,301	24,486	3,627	387	35	337,984
	F	-	-	77,312	115,645	90,869	25,122	3,768	385	65	313,166
10	M	-	-	40,182	78,359	101,548	71,979	14,201	3,233	391	309,893
	F	-	-	31,443	66,809	94,180	75,484	11,918	2,906	284	283,024
11	M	-	-	17,343	39,935	71,039	81,053	24,257	11,004	2,343	246,974
	F	-	-	13,673	31,334	62,589	80,271	16,840	8,681	1,992	215,380
12	M	-	-	13,846	20,640	43,586	62,217	22,402	21,651	9,034	193,376
	F	-	-	10,313	15,316	35,415	56,635	12,120	14,804	7,274	151,877
13	M	-	-	-	11,897	21,754	36,010	10,496	18,854	16,530	115,541
	F	-	-	-	7,876	15,670	28,885	4,948	10,574	11,295	79,248
14	M	-	-	-	79	7,115	13,738	4,259	9,961	15,826	60,978
	F	-	-	-	33	4,231	9,579	1,546	4,626	8,605	28,620
15 & higher	M	-	-	--	60	2,022	3,868	2,758	6,509	16,683	31,900
	F	-	-	-	24	1,155	2,227	640	1,946	6,204	12,196
Total	M	9,671	10,889	682,441	444,709	373,276	298,530	82,582	71,619	60,845	2,034,562
	F	9,233	9,812	612,405	401,903	340,991	283,577	52,403	43,993	35,719	1,790,036
	MF	18,904	20,701	1,294,846	846,612	714,267	582,107	134,985	115,612	96,564	3,824,598
Mean	M	6.00	5.64	8.29	9.62	10.73	11.68	12.03	13.05	14.06	
	F	5.98	5.65	8.23	8.23	10.60	11.53	11.65	12.72	13.74	
	MF	5.99	5.64	8.26	8.26	10.67	11.61	11.88	12.93	13.94	
Median	M	5.99	5.58	9.07	9.44	10.60	11.59	11.94	12.98	14.13	
	F	5.97	5.59	8.01	9.31	10.45	11.45	11.59	12.67	13.71	
	MF	5.98	5.58	8.04	9.38	10.53	11.52	11.80	12.85	13.97	

STUDENT POPULATION - TABLE 8

Age, Sex and Grade Distribution of Pupils Enrolled in Elementary Grades in 1960

Age	Sex	Pupils By Grade									Total
		Pre-Primary	Kinder-Garten	P.1	P.2	P.3	P.4	P.5	P.6	P.7	
5 & below	M	6,824	10,321	-	-	-	-	-	-	-	17,145
	F	6,300	9,059	-	-	-	-	-	-	-	15,359
6	M	1,767	1,561	114,178	5,584	579	52	-	-	-	123,721
	F	1,771	1,454	104,882	5,503	489	29	-	-	-	114,128
7	M	-	-	250,179	44,721	3,121	670	-	-	-	298,691
	F	-	-	236,640	45,152	3,078	518	-	-	-	285,388
8	M	-	-	190,293	134,980	38,709	2,593	523	34	-	367,862
	F	-	-	172,511	132,606	39,932	2,557	647	71	2	348,326
9	M	-	-	84,482	127,352	101,558	32,997	4,539	648	47	351,623
	F	-	-	70,563	118,993	101,754	34,505	4,287	862	51	331,015
10	M	-	-	36,347	78,806	105,386	81,674	16,436	4,322	511	323,482
	F	-	-	27,935	65,862	100,169	83,739	13,326	4,076	504	295,611
11	M	-	-	14,983	38,294	70,082	82,936	26,364	13,844	3,404	249,907
	F	-	-	12,079	29,305	60,675	81,767	17,503	11,129	3,006	215,464
12	M	-	-	11,725	19,451	41,775	61,927	20,445	22,729	11,053	189,105
	F	-	-	9,094	13,867	32,304	53,935	11,444	15,170	8,765	144,579
13	M	-	-	-	11,557	20,557	34,001	9,960	18,200	19,492	113,767
	F	-	-	-	7,832	14,581	26,409	4,659	9,888	13,524	76,893
14	M	-	-	-	92	7,778	11,995	3,616	8,765	16,682	48,928
	F	-	-	-	39	5,099	7,880	1,453	4,013	9,233	27,717
15	M	-	-	-	31	136	3,400	2,039	5,554	15,215	26,375
	F	-	-	-	7	50	1,644	509	1,745	5,565	9,520
Total	M	8,591	11,882	702,817	460,868	389,681	312,245	84,022	74,096	66,404	2,110,606
	F	8,071	10,513	633,704	419,166	358,131	292,983	53,828	46,954	40,650	1,864,000
	MF	16,662	22,395	1,336,521	880,034	747,812	605,228	137,850	121,050	107,054	3,974,606
Mean	M	5.71	5.63	8.17	9.54	10.64	11.57	11.88	12.88	13.91	
	F	5.72	5.64	8.11	9.40	10.49	11.41	11.56	12.52	13.59	
	MF	5.71	5.63	8.14	9.47	10.57	11.49	11.76	12.74	13.79	
Median	M	5.63	5.58	7.95	9.35	10.48	11.46	11.77	12.80	13.93	
	F	5.64	5.58	7.90	9.22	10.34	11.31	11.49	12.48	13.59	
	MF	5.63	5.58	7.92	9.29	10.41	11.38	11.66	12.67	13.79	

STUDENT POPULATION - TABLE 9

Age, Sex and Grade Distribution of Pupils Enrolled in Elementary Grades in 1961

Age	Sex	Pupils by Grade									Total
		Pre-Primary	Kinder-garten	P.1	P.2	P.3	P.4	P.5	P.6	P.7	
5 & below	M	4,370	13,065	-	-	-	-	-	-	-	17,535
	F	4,317	11,516	-	-	-	-	-			15,833
6	M	4,269	2,287	108,905	7,111	535	108	-	-	-	123,215
	F	3,844	1,937	101,019	7,637	522	99	-	-	-	115,058
7	M	-	-	266,122	60,371	7,930	1,266	-	-	-	335,689
	F	-	-	253,280	69,865	8,632	1,083	-	-	-	332,860
8	M	-	-	184,875	155,874	44,928	7,912	925	24	13	394,551
	F	-	-	167,205	151,068	45,885	9,847	770	26	6	374,807
9	M	-	-	77,589	130,192	109,419	44,067	5,209	532	49	367,057
	F	-	-	64,301	119,344	112,143	44,206	5,004	590	24	345,612
10	M	-	-	31,814	74,623	110,624	91,143	17,799	4,381	508	330,892
	F	-	-	24,546	60,112	103,839	93,306	14,379	4,504	497	301,183
11	M	-	-	13,364	36,113	69,706	87,182	27,569	15,092	3,271	252,297
	F	-	-	10,165	26,694	59,956	83,192	18,039	12,295	3,356	213,697
12	M	-	-	11,168	18,111	39,325	60,525	19,132	25,949	12,697	186,907
	F	-	-	8,502	12,196	30,725	52,188	10,080	16,849	10,500	141,040
13	M	-	-	-	8,399	18,561	32,607	8,543	18,480	21,288	107,878
	F	-	-	-	5,171	13,214	25,214	3,719	9,484	14,119	70,921
14	M	-	-	-	3,199	6,282	11,649	2,967	8,420	17,507	50,024
	F	-	-	-	1,885	3,907	7,538	1,142	3,725	9,244	27,441
15	M	-	-	-	14	1,760	2,773	1,405	4,303	14,054	24,309
	F	-	-	-	6	923	1,408	372	1,531	5,581	9,821
Total	M	8,639	15,353	693,837	494,007	409,070	339,232	83,549	77,181	69,387	2,190,254
	F	8,161	13,453	629,018	453,978	379,746	318,081	53,505	49,004	43,327	1,948,273
	MF	16,800	28,805	1,322,855	947,985	788,816	657,313	137,054	126,185	112,714	4,138,527
Mean	M	5.99	5.65	8.13	9.40	10.53	11.39	11.74	12.79	13.85	
	F	5.97	5.64	8.06	9.21	10.37	11.23	11.42	12.47	13.54	
	MF	5.98	5.65	8.10	9.30	10.45	11.31	11.61	12.67	13.73	
Median	M	5.99	5.59	7.89	9.18	10.38	11.29	11.65	12.72	13.83	
	F	5.95	5.58	7.84	8.99	10.22	11.13	11.37	12.42	13.52	
	MF	5.97	5.59	7.87	9.09	10.30	11.21	11.54	12.60	13.72	

STUDENT POPULATION - TABLE 10

Sex and Grade Distribution of Pupils Enrolled In Secondary Grades

YEAR	SEX	PUPILS BY GRADE									TOTAL
		MS 1	MS 2	MS 3	MS 4			MS 5			
					Science		Arts	Science		Arts	
1954	M	34,401	16,342	12,658	3,327	2,997	1,163	2,065	1,900	652	57,298
	F	10,492	7,481	5,338		1,493			817		25,621
1955	M	27,288	20,818	15,536	2,644		435	1,548		276	68,545
	F	12,528	9,592	7,032	731		670	565		428	31,546
1956	M	33,535	25,153	19,275	3,308		496	1,996		370	84,133
	F	15,802	11,694	9,124	1,046		843	784		583	39,876
1957	M	38,148	28,531	22,273	4,232		531	2,258		310	96,283
	F	19,793	14,092	10,674	1,470		950	1,010		678	48,667
1958	M	44,437	35,600	28,195	5,464		635	3,377		423	118,131
	F	24,430	19,192	14,401	2,068		1,084	1,519		979	63,673
1959	M	49,096	39,802	33,427	7,315		1,058	4,982		576	136,256
	F	28,664	22,296	17,737	3,285		2,013	1,941		1,210	77,146
1960	M	52,845	43,612	37,374	8,135		1,643	4,235		721	148,565
	F	32,395	25,858	21,170	4,037		3,052	2,859		1,473	90,844
1961	M	57,917	46,739	41,620	11,054		2,195	6,180		1,077	166,782
	F	35,873	29,219	24,876	5,080		3,762	2,993		2,171	103,974
1962	M	58,066	51,028	43,572		13,067			8,215		173,948
	F	37,165	33,172	28,233		9,414			5,398		113,382
TOTAL	M	384,733	307,625	253,930		65,209			38,444		1,049,941
	F	217,142	172,596	138,585		40,998			25,408		594,729
	MF	601,875	480,221	392,515		106,207			63,852		1,644,670

STUDENT POPULATION - TABLE 11

Age, Sex and Grade Distribution of Pupils Enrolled in Secondary Grades in 1959

AGE	SEX	PUPILS BY GRADE					TOTAL
		M.S. 1	M.S. 2	M.S. 3	M.S. 4	M.S. 5	
10	M	26	1	-	-	-	27
	F	78	6	-	-	-	84
11	M	248	11	1	-	-	260
	F	155	75	-	-	-	230
12	M	1,806	188	10	-	-	2,004
	F	1,503	221	100	-	-	1,824
13	M	6,056	1,201	112	-	-	7,369
	F	4,855	1,047	148	-	-	6,100
14	M	11,931	4,572	691	-	-	17,194
	F	8,270	3,384	695	-	-	12,349
15	M	13,832	9,195	2,851	294	103	26,275
	F	7,363	6,222	2,288	478	61	16,413
16	M	8,628	10,867	7,214	1,031	256	27,996
	F	4,098	5,938	4,592	977	291	15,896
17	M	4,023	7,822	9,753	2,617	814	25,029
	F	1,635	3,344	4,962	1,577	675	12,193
18	M	1,642	3,572	7,025	2,405	1,519	16,163
	F	488	1,293	2,941	1,386	897	7,005
19	M	521	1,399	3,519	1,272	1,476	8,187
	F	161	438	1,212	603	726	3,140
20+	M	383	974	2,251	754	1,390	5,752
	F	58	328	749	277	500	1,912
Total	M	49,096	39,802	33,427	8,373	5,558	136,256
	F	28,664	22,296	17,737	5,298	3,151	77,146
	MF	77,760	62,098	51,164	13,671	8,709	213,402
Mean	M	15.40	16.51	17.66	18.17	18.97	
	F	15.02	16.10	17.22	17.78	18.59	
	MF	15.26	16.36	17.51	18.02	18.83	
Median	M	15.32	16.36	17.60	18.10	19.06	
	F	14.94	16.03	17.20	17.76	18.61	
	MF	15.19	16.29	17.46	17.97	18.89	

STUDENT POPULATION - TABLE 12

Age, Sex and Grade Distribution of Pupils Enrolled in Secondary Grades in 1960

AGE	SEX	PUPILS BY GRADE					TOTAL
		M.S. 1	M.S. 2	M.S. 3	M.S. 4	M.S. 5	
10	M	38	1	-			39
	F	22	-	-	-	-	22
11	M	281	15	-	-	-	296
	F	263	38	-	-	-	301
12	M	2,498	312	9	-	-	2,819
	F	2,100	258	5	-	-	2,363
13	M	8,362	1,529	150	-	-	10,041
	F	6,844	1,513	143	-	-	8,500
14	M	14,392	5,855	1,107	-	-	21,354
	F	9,834	4,797	1,091	-	-	15,722
15	M	13,431	10,748	4,568	342	80	29,169
	F	7,621	7,383	3,608	545	146	19,303
16	M	8,098	11,488	8,696	1,348	381	30,011
	F	3,682	6,403	6,059	1,533	413	18,090
17	M	3,456	7,687	9,842	2,513	854	24,352
	F	1,340	3,492	5,238	2,122	795	12,987
18	M	1,323	3,663	7,201	2,623	1,130	15,940
	F	524	1,364	3,165	1,785	1,188	8,026
19	M	461	1,483	3,589	1,882	1,195	8,610
	F	128	433	1,261	794	971	3,587
20 +	M	505	831	2,212	1,070	1,316	5,934
	F	37	177	600	310	819	1,943
TOTAL	M	52,845	43,612	37,374	9,778	4,956	148,565
	F	32,395	25,858	21,170	7,089	4,332	90,844
	MF	85,240	69,470	58,544	16,867	9,288	239,409
Mean	M	15.19	16.37	17.48	18.27	18.90	
	F	14.81	15.94	17.04	17.74	18.63	
	MF	15.04	16.21	17.32	18.05	18.77	
Median	M	15.06	16.29	17.42	18.26	19.03	
	F	14.71	15.86	16.95	17.69	18.63	
	MF	14.92	16.13	17.25	18.01	18.85	

STUDENT POPULATION - TABLE 13

Age, Sex and Grade Distribution of Pupils Enrolled in Secondary Grades in 1961

Age	Sex	Pupils By Grade					Total
		M.S.1	M.S.2	M.S.3	M.S.4	M.S.5	
10	M	27	-	1	-	-	28
	F	22	-	10	-	-	32
11	M	287	12	2	-	-	301
	F	275	14	1	-	-	290
12	M	2,774	239	18	-	-	3,031
	F	2,504	179	10	-	-	2,693
13	M	9,348	1,816	179	-	-	11,343
	F	7,487	1,781	137	-	-	9,405
14	M	17,129	7,028	1,348	-	-	25,505
	F	11,811	6,029	1,406	-	-	19,246
15	M	15,112	12,675	5,082	718	40	33,627
	F	8,264	8,870	4,410	692	91	22,327
16	M	7,967	12,442	9,988	2,007	331	32,735
	F	3,688	6,941	6,984	1,887	445	19,945
17	M	3,389	7,490	11,070	3,366	995	26,310
	F	1,281	3,576	6,326	2,702	1,187	15,072
18	M	1,057	3,118	7,702	3,361	1,892	17,130
	F	408	1,239	3,510	2,086	1,479	8,722
19	M	430	1,172	3,787	2,230	1,866	9,485
	F	115	455	1,407	992	1,085	4,054
20 +	M	397	747	2,443	1,567	2,133	7,287
	F	18	135	675	483	877	2,188
TOTAL	M	57,917	46,739	41,620	13,249	7,257	166,782
	F	35,873	29,219	24,876	8,842	5,164	103,974
	MF	93,790	75,958	66,496	22,091	12,421	270,756
MEAN	M	15.09	16.22	17.44	18.19	19.10	
	F	14.73	15.85	18.00	17.75	18.59	
	MF	14.95	16.08	17.28	18.01	18.89	
MEDIAN	M	14.96	16.13	17.38	18.16	19.20	
	F	14.65	15.74	16.93	17.68	18.58	
	MF	14.84	15.97	17.21	17.95	18.93	

STUDENT POPULATION - TABLE 14

Pupil Classroom Ratio by Grade and by Kind (Government or Private) of Institution

Grade / Year	Kindergarten Pre-primary		Elementary														Secondary										Teacher Training		Vocational	
	Gov.	Private	1		2		3		4		5		6		7		1		2		3		4		5		Certificate.	Degree		
			G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P			G	P
1954	27	28	34	36	29	30	25	28	21	26	41	36	40	32	39	30	40	30	36	26	31	24	28	32	21	27	29	34	33	x
1955	31	26	34	39	30	32	25	30	21	28	38	38	41	33	39	31	40	30	31	31	34	29	28	36	23	23	x	x	x	x
1956	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1957	28	23	37	37	30	33	27	30	23	28	37	36	37	34	38	34	39	31	38	29	36	27	34	38	24	31	33	33	33	x
1958	30	22	36	37	30	33	27	31	24	28	38	36	36	33	35	32	40	31	38	29	37	28	34	35	28	32	32	38	34	x
1959	29	21	35	37	30	33	27	30	23	28	37	34	37	33	35	30	40	31	38	29	37	27	35	37	28	40	37	37	26	82
1960	31	21	35	37	30	33	21	31	23	28	36	33	35	31	35	30	40	29	37	29	37	28	38	33	31	29	35	41	27	34
1961	30	22	35	35	31	31	28	30	24	28	33	30	30	33	33	30	38	29	36	28	35	28	38	38	29	38	36	29	27	x
1962	27	21	35	33	32	31	29	29	25	28	32	28	30	29	32	29	37	27	36	26	30	26	36	36	30	34	39	31	26	x

x DATA ARE NOT AVAILABLE

STUDENT POPULATION - TABLE 15

Projections of Student Enrollment, 1962-1980

YEAR	PROJECTION I					PROJECTION II					PROJECTION III				
	0.75	MS.1	MS.2	MS.3	MS. 1-2-3	1.21	MS.1	MS.2	MS.3	MS.1-2-3	1.63	MS.1	MS.2	MS.3	MS.1-2-3
1962	19.75	107,436	86,754	71,685	265,875	20.21	109,577	86,754	71,685	268,016	20.63	111.531	86,754	71,685	269,970
1963	20.50	116,038	98,921	82,443	297,402	21.42	120,816	100,630	82,443	303,889	22.26	125,180	102,189	82,443	309,812
1964	21.25	130,837	107,634	94,078	332,549	22.63	138,893	111,707	95,556	346,156	23.89	146,248	115,426	96,905	358,579
1965	22.00	151,914	120,768	102,816	375,598	23.84	164,157	127,816	106,497	398,470	25.52	175,336	134,250	109,848	419,434
1966	22.75	166,999	139,584	115,079	421,662	25.05	183,385	150,426	121,555	455,366	27.15	216,013	160,324	127,468	503,805
1967	23.50	184,188	154,481	132,622	471,291	26.26	205,304	169,205	142,669	517,178	28.78	262,960	196,748	151,842	611,550
1968	24.25	199,280	170,463	147,317	517,060	27.47	225,207	189,552	161,091	575,850	30.41	277,113	239,748	185,866	702,727
1969	25.00	209,982	184,936	162,659	557,577	28.68	240,346	208,527	180,593	629,466	32.04	296,269	257,578	226,574	780,421
1970	25.75	220,700	195,676	176,760	593,136	29.89	255,639	223,492	199,019	678,150	33.67	317,436	275,574	246,194	839,204
1971	26.50	233,194	205,861	187,505	626,560	31.10	273,134	237,971	213,864	724,969	35.30	341,733	295,201	263,784	900,718
1972	27.25	247,237	217,380	197,424	662,041	32.31	292,608	254,133	227,920	774,661	36.93	368,693	317,574	282,577	968,844
1973	28.00	262,391	230,337	208,411	701,139	33.52	313,579	272,129	243,352	829,060	38.56	397,702	342,488	303,871	1,044,061
1974	28.75	278,312	244,399	220,754	743,465	34.73	335,658	291,600	260,511	887,769	40.19	428,276	369,425	327,619	1,125,320
1975	29.50	294,775	259,242	234,191	788,208	35.94	358,580	312,179	279,125	949,884	41.82	460,085	397,917	353,371	1,211,373
1976	30.25	311,883	274,636	248,417	834,936	37,15	382,475	333,598	298,847	1,014,920	43.45	493,298	427,631	380,675	1,301,604
1977	31.00	329,385	290,628	263,202	883,215	38.36	407,035	355,922	319,410	1,082,367	45.08	527,519	458,651	409,196	1,395,366
1978	31.75	347,433	307,024	278,561	933,018	39.57	432,449	378,914	340,842	1,152,205	46.71	562,994	490,675	438,973	1,492,642
1979	32.50	365,910	323,920	294,329	984,159	40.78	458,573	402,689	362,943	1,224,205	48.34	599,534	523,852	469,746	1,593,132
1980	33.25	384,945	341,231	310,572	1,036,748	41.99	485,567	427,149	385,790	1,298,506	49.97	637,350	558,054	502,033	1,697,437

STUDENT POPULATION - TABLE 16

Projections of Enrollments, Matayom 4-5, 1962-1980

YEAR	PROJECTION I			PROJECTION II			PROJECTION III			LINEAR TREND		
	M.S.4	M.S.5	M.S.4-5	M.S.4	M.S.5	M.S.4-5	M.S.4	M.S.5	M.S.4-5	M.S.4	M.S.5	M.S.4-5
1962	25,268	14,840	40,108	25,268	14,840	40,108	25,268	14,840	40,108	28,728	86,136	45,600
1963	27,240	15,998	43,238	27,240	15,998	43,238	27,240	15,998	43,238	35,280	20,720	56,000
1964	31,328	18,399	49,727	31,328	18,399	49,727	31,328	18,399	49,727	41,832	24,568	66,400
1965	35,750	20,996	56,746	36,311	21,326	57,637	36,824	21,627	58,451	43,384	28,416	76,800
1966	39,070	22,946	62,016	40,469	23,768	64,237	41,742	24,515	66,257	54,936	32,264	87,200
1967	43,730	25,683	69,413	46,191	27,128	73,319	48,438	28,448	76,886	61,488	36,112	97,600
1968	50,396	29,598	79,994	54,214	31,825	86,039	57,700	33,887	91,587	68,040	39,960	108,100
1969	55,980	32,877	88,857	61,215	35,952	97,167	70,629	41,481	112,110	74,592	43,808	118,400
1970	61,810	36,301	98,111	68,625	40,304	108,929	86,098	50,565	136,663	81,144	47,656	128,800
1971	67,169	39,448	106,617	75,627	44,416	120,043	93,554	54,944	148,498	87,696	51,504	139,200
1972	71,252	41,846	113,098	81,268	47,726	128,997	100,238	58,870	159,108	94,248	55,352	149,600
1973	75,021	44,060	119,081	86,610	50,866	137,476	107,379	63,064	170,443	100,800	59,200	160,000
1974	79,196	46,512	125,708	92,474	54,310	146,784	115,471	67,816	183,287	107,352	63,048	170,400
1975	83,887	49,267	133,154	98,994	58,139	157,133	124,495	73,116	197,611	113,904	66,896	180,800
1976	88,993	52,266	141,259	106,068	62,294	168,362	134,281	78,863	213,144	120,456	70,744	191,200
1977	94,398	55,440	149,838	113,562	66,695	180,257	144,657	84,957	229,614	127,008	74,592	201,600
1978	100,017	58,734	158,751	121,376	71,284	192,660	155,494	91,322	246,816	133,560	78,440	212,000
1979	105,853	62,168	168,021	129,520	76,067	205,587	166,810	97,968	264,778	140,112	82,288	222,400
1980	111,845	65,687	177,532	137,918	80,999	218,917	178,503	104,835	283,338	146,664	86,136	232,800

T A B L E 17

Number of Students and Graduates by Fields of Studies

YEAR	NATURAL SCIENCE & ENGINEERING			HUMANITIES & ARTS			MEDICINE & NURSING			AGRICULTURE			EDUCATION		
	Students	Graduate Degree	Graduate Diploma	(1) Students	Graduate Degree	Graduate Diploma	Students	Graduate Degree	Graduate Diploma	Students	Graduate Degree	Graduate Diploma	Students	Graduate Degree	Graduate Diploma
1954	1,872	107	1	16,884	468	34	1,616	239	159	757	63	151	-	41	15
1955	2,203	139	2	19,756	530	119	1,756	265	112	873	84	153	-	44	12
1956	2,456	191	2	23,239	521	76	1,962	229	153	1,005	117	196	-	36	9
1957	2,694	207	-	27,492	774	61	2,208	258	159	1,076	125	280	(2) 243	44	4
1958	2,891	211	141	39,628	598	107	2,469	295	157	1,265	165	185	359	89	3
1959	3,159	291	189	37,673	914	100	2,620	313	170	1,519	190	196	477	49	-
1960	2,919	252	297	31,145	784	128	2,832	376	174	1,714	228	224	650	142	-
1961	2,795	304	372	32,512	1,165	414	2,978	432	275	1,834	216	213	690	171	4
1962	3,017	401	254	33,153	1,651	171	3,150	392	177	2,101	241	333	683	214	18
TOTALS	24,006	2,103	1,258	261,482	7,408	1,210	21,591	2,799	1,536	12,144	1,429	1,931	3,120	781	65

(1) Includes part-time students.

(2) School of Education created in 1957.

STUDENT POPULATION - TABLE 18

THAI EDUCATED UNIVERSITY GRADUATES THROUGH 1980

FIELDS OF STUDIES B.E. A.D.	2501 1958	2502 1959	2503 1960	2504 1961	2505 1962	2506 1963	2507 1964	2508 1965	2509 1966	2510 1967	2511 1968	2512 1969	2513 1970	2514 1971	2515 1972	2516 1973	2517 1974	2518 1975	2519 1976	2520 1977	2521 1978	2522 1979	2523 1980
Physical, Natural Sciences & Engineering.																							
1. Engineering	114	188	197	202	234	235	235	250	250	300	350	400	425	425	450	450	450	475	475	475	500	500	500
2. Sciences	87	113	70	105	165	165	165	165	175	175	225	250	225	225	250	275	275	300	325	350	400	425	450
Medical Sciences & Nursing.																							
1. Medicine	193	239	327	230	218	250	250	250	250	250	250	300	350	350	350	350	375	375	400	400	425	425	450
2. Medical Sciences	95	47	132	163	141	150	150	150	175	200	225	225	225	300	300	300	325	325	350	350	375	400	450
Agriculture	144	134	164	162	172	175	175	200	200	225	275	325	350	375	400	425	425	450	450	475	500	525	550
Social Sciences																							
Chulalongkorn Univ.	164	232	254	255	253	250	250	250	250	275	275	275	300	300	325	325	325	350	350	350	375	375	400
Thammasat Univ.	387	378	332	720	1131	1100	1100	1500	1000	1000	1000	750	750	750	750	775	800	800	825	825	850	850	875
Humanities & Fine Arts	135	165	190	163	224	225	225	250	250	300	300	325	325	325	350	350	375	400	400	425	450	450	450

STUDENT POPULATION - TABLE 19

University Enrollment Projections By Linear Trend

YEAR	Degree	Diploma	Natural Science Engineering	Humanities Arts	Medicine	Agriculture	Education
1963	2,718	1,155	405	1,435	201	276	200
1964	2,936	1,253	422	1,557	226	299	221
1965	3,154	1,351	453	1,679	250	323	243
1966	3,372	1,549	484	1,801	274	346	264
1967	3,590	1,547	516	1,923	299	369	286
1968	3,808	1,645	547	2,045	323	392	307
1969	4,026	1,743	578	2,167	348	416	329
1970	4,244	1,841	609	2,289	370	439	350
1971	4,462	1,939	641	2,411	396	462	372
1972	4,680	2,037	672	2,533	421	486	393
1973	4,898	2,135	703	2,655	445	509	412
1974	5,116	2,233	735	2,777	470	532	433
1975	5,334	2,331	766	2,899	494	556	455
1976	5,552	2,429	797	3,021	518	579	470
1977	5,770	2,527	829	3,143	543	602	498
1978	5,988	2,625	860	3,265	567	625	519
1979	6,206	2,723	891	3,387	592	649	541
1980	6,424	2,821	922	3,509	616	672	562
TOTAL	82,378	35,884	11,830	44,496	7,353	8,532	6,855

STUDENT POPULATION - TABLE 20

Comparison of Enrollments by Government Needs and Linear Trends

YEAR	NATURAL SCIENCE ENGINEERING		HUMANITIES-ARTS		MEDICINE		AGRICULTURE	
	Govt. Needs	Linear Trend	Govt. Needs	Linear Trend	Govt. Needs	Linear Trend	Govt. Needs	Linear Trend
1963	400	405	1,575	1,435	250	201	175	276
1964	400	422	1,575	1,557	250	226	175	299
1965	415	453	2,000	1,679	250	250	200	323
1966	425	484	1,500	1,801	250	274	200	346
1967	475	516	1,575	1,923	250	299	225	369
1968	575	547	1,575	2,045	250	323	275	392
1969	650	578	1,350	2,167	300	348	325	416
1970	650	609	1,375	2,289	350	370	350	439
1971	650	641	1,375	2,411	350	396	375	462
1972	700	672	1,425	2,533	350	421	400	486
1973	725	703	1,450	2,655	350	445	425	509
1974	725	735	1,500	2,777	375	470	425	532
1975	775	766	1,550	2,899	375	494	450	556
1976	800	797	1,475	3,021	400	518	450	579
1977	800	829	1,600	3,143	400	543	475	602
1978	900	860	1,675	3,265	425	567	500	625
1979	925	891	1,675	3,387	425	592	525	649
1980	950	922	1,725	3,509	450	616	550	672
TOTAL	11,940	11,830	27,975	44,496	6,050	7,353	6,500	8,532

STUDENT POPULATION

List of Charts

CHART #

1 .... Public and Private School Enrollments, 1961

2 .... Number of Students Leaving School at Each Level of Education, 1961.

3 .... Retention of Students by Grade Levels, 1961.

4 .... Enrollments in Secondary and Higher Education By Type of Schools.

5 .... Projected Enrollments 1954-1960 in Four Vocational Schools.

6 .... Projected Enrollments in Pratom 1-4 to 1980.

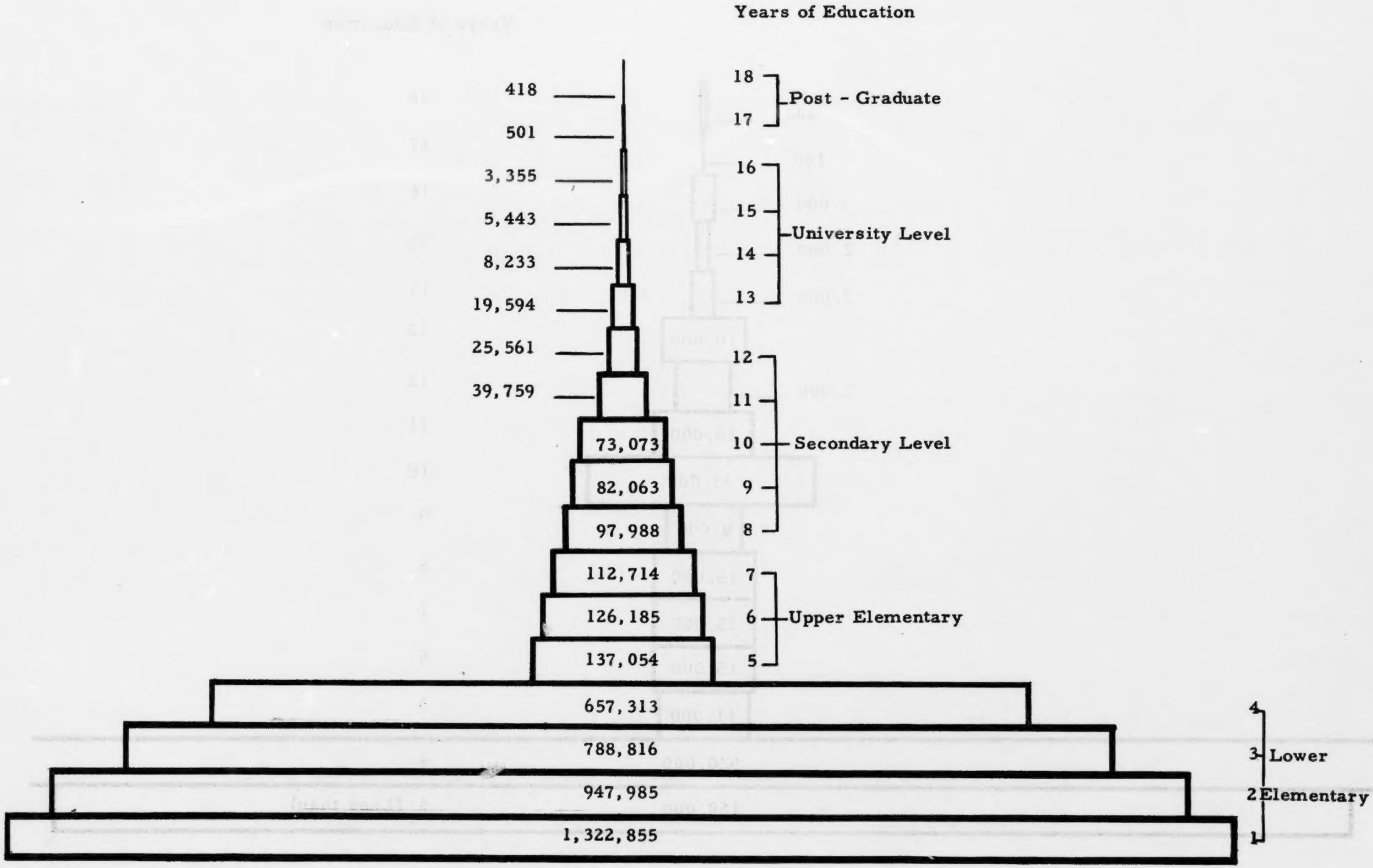
7 .... Total Secondary School Enrollment-Projection Maw Saw 1-2-3 Grades 8-9-10.

8 .... Secondary School Enrollment, Projected (Maw Saw 4 - Grade 11).

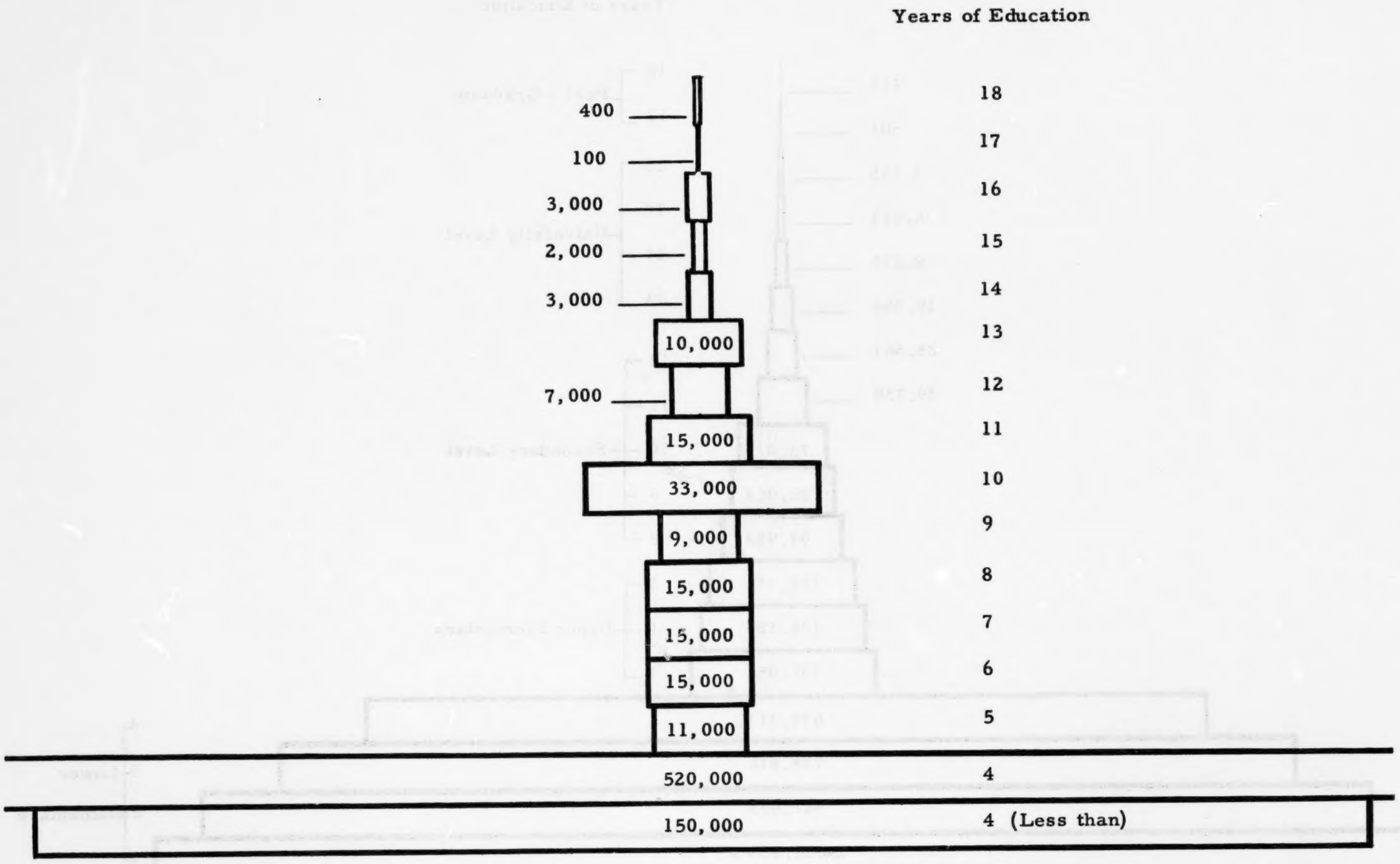
9 .... Secondary School Enrollments, Projected (Maw Saw 5 - Grade 12).

10 .... Number of University Graduates, Projected.

11 .... Number of University Graduates, Projected by Fields of Study.

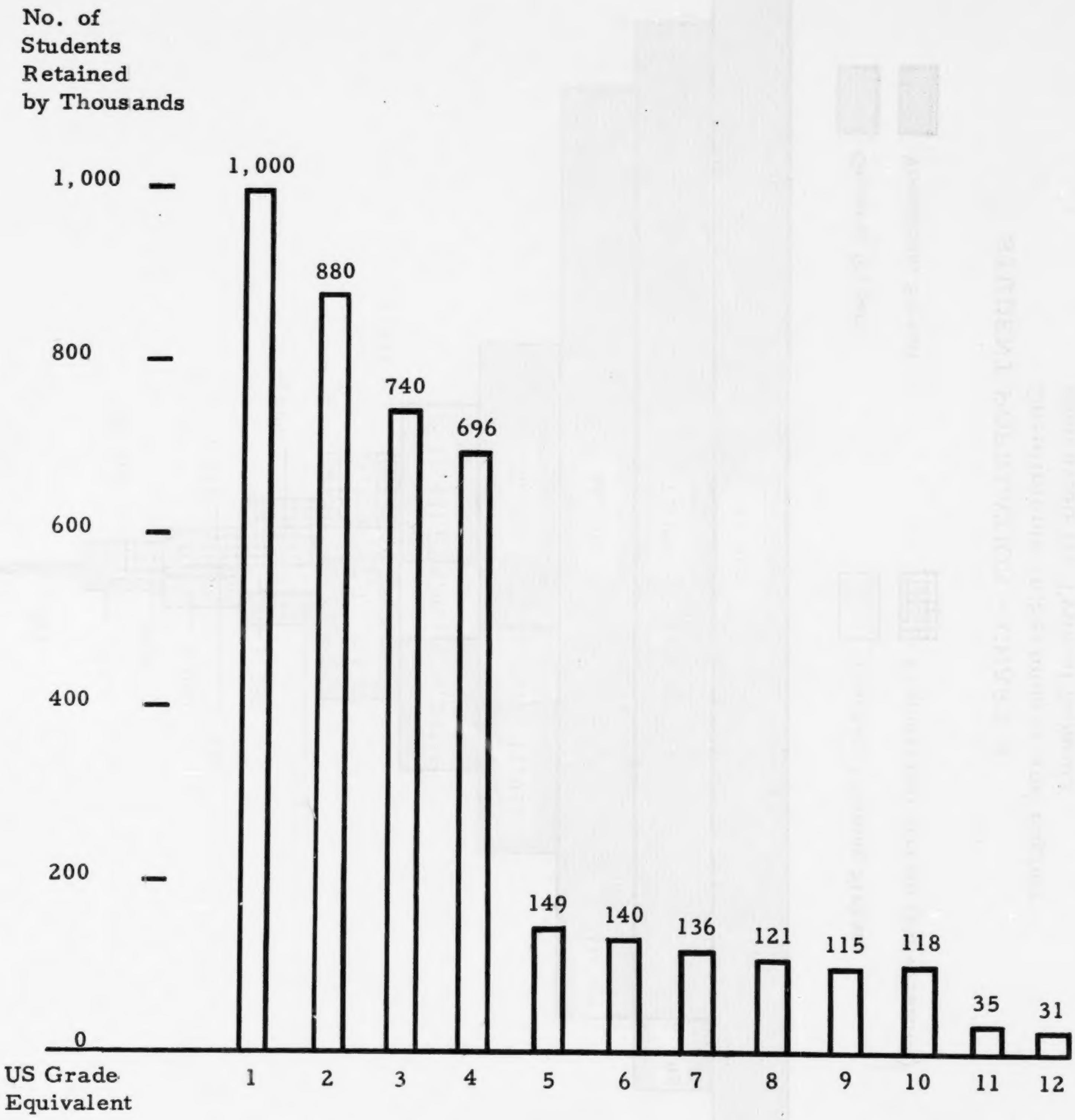


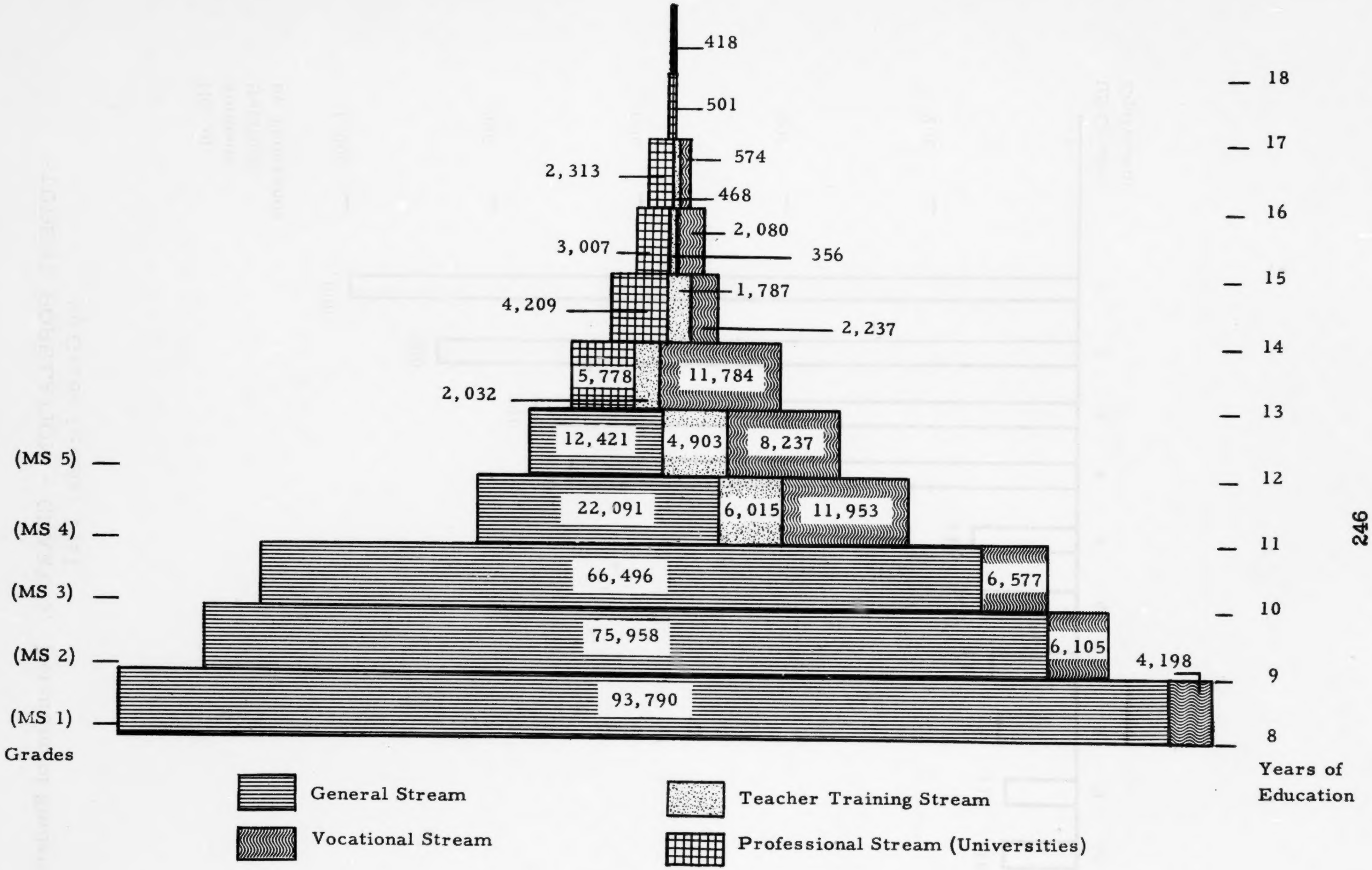
STUDENT POPULATION - CHART 1
Public and Private School Enrollments, 1961



STUDENT POPULATION - CHART 2
Number of Students Leaving School
at Each Level of Education, 1961

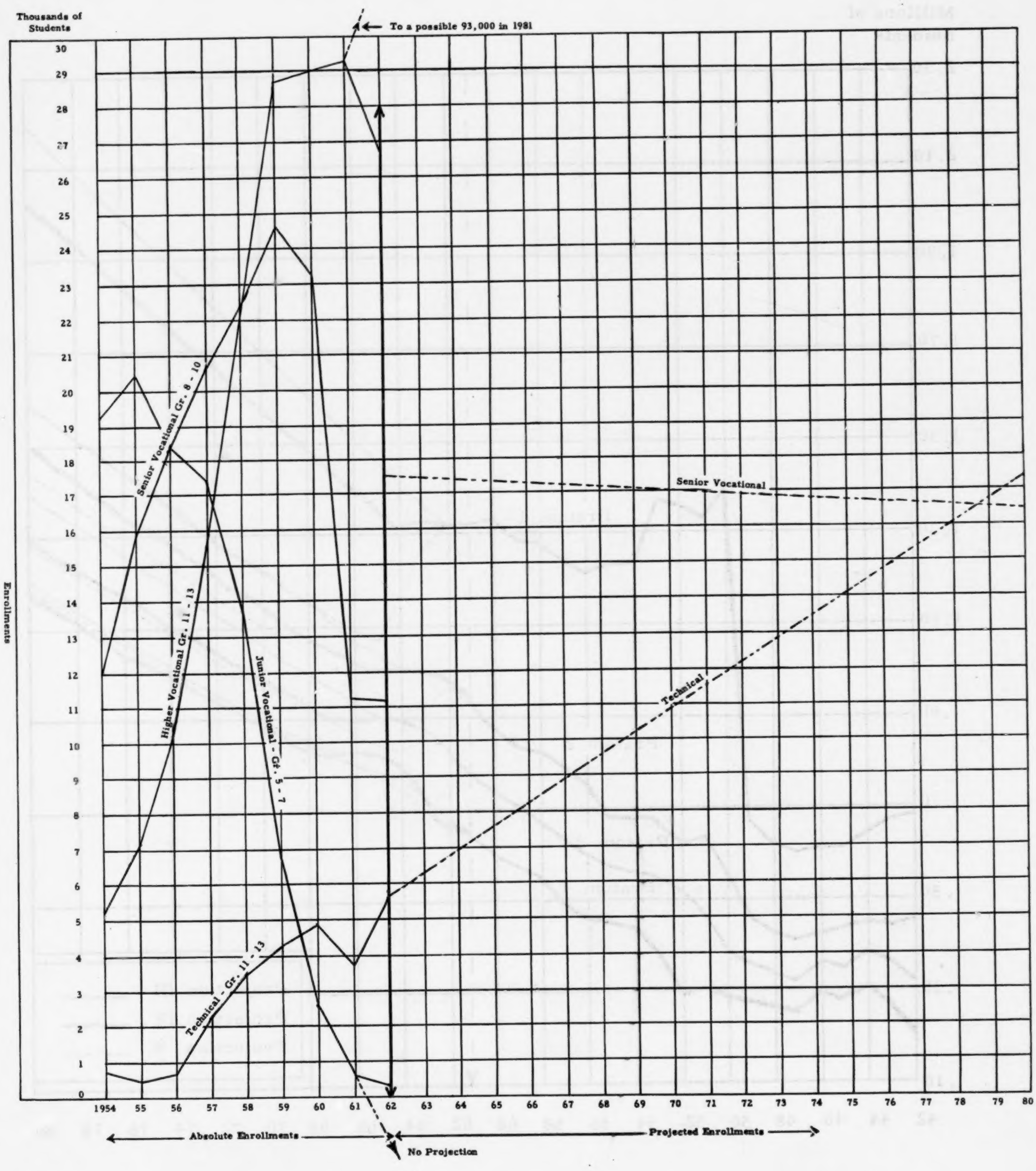
STUDENT POPULATION - CHART 3. Retention of Students by Grade Levels, 1961



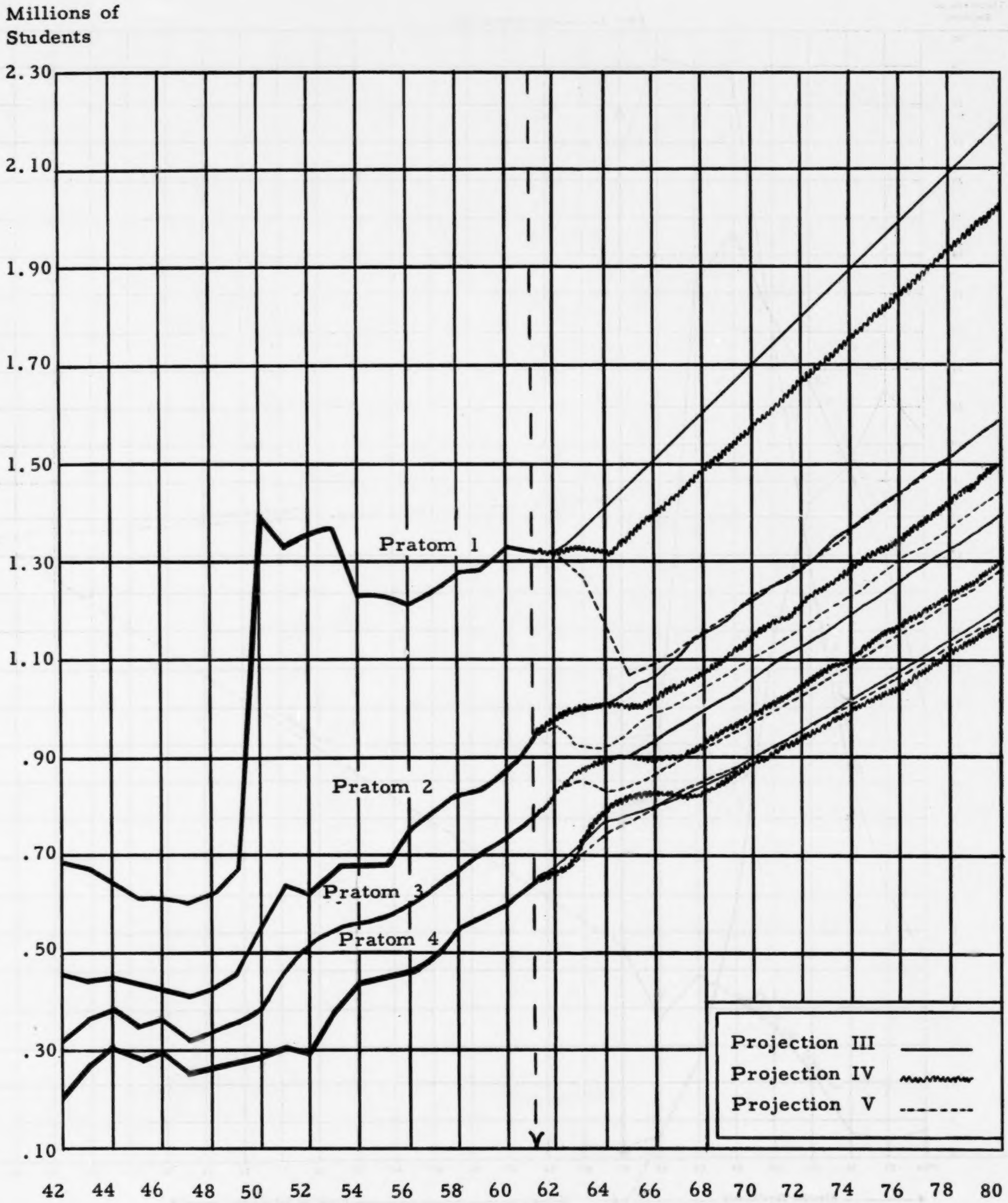


STUDENT POPULATION - CHART 4
Enrollments in Secondary and Higher
Education By Type of Schools

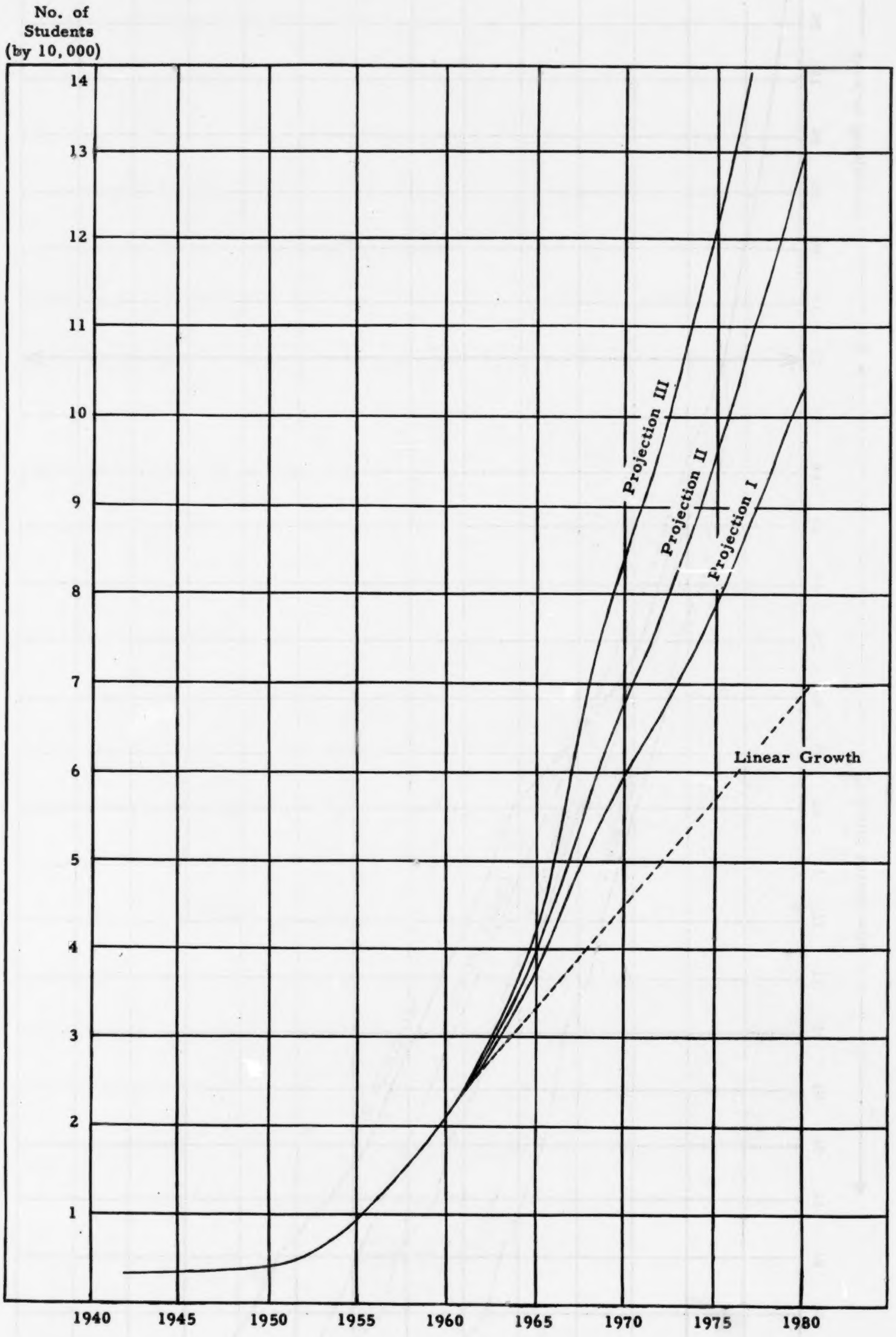
STUDENT POPULATION - CHART 5. Projected Enrollments, 1954-1960 in Four Vocational Schools

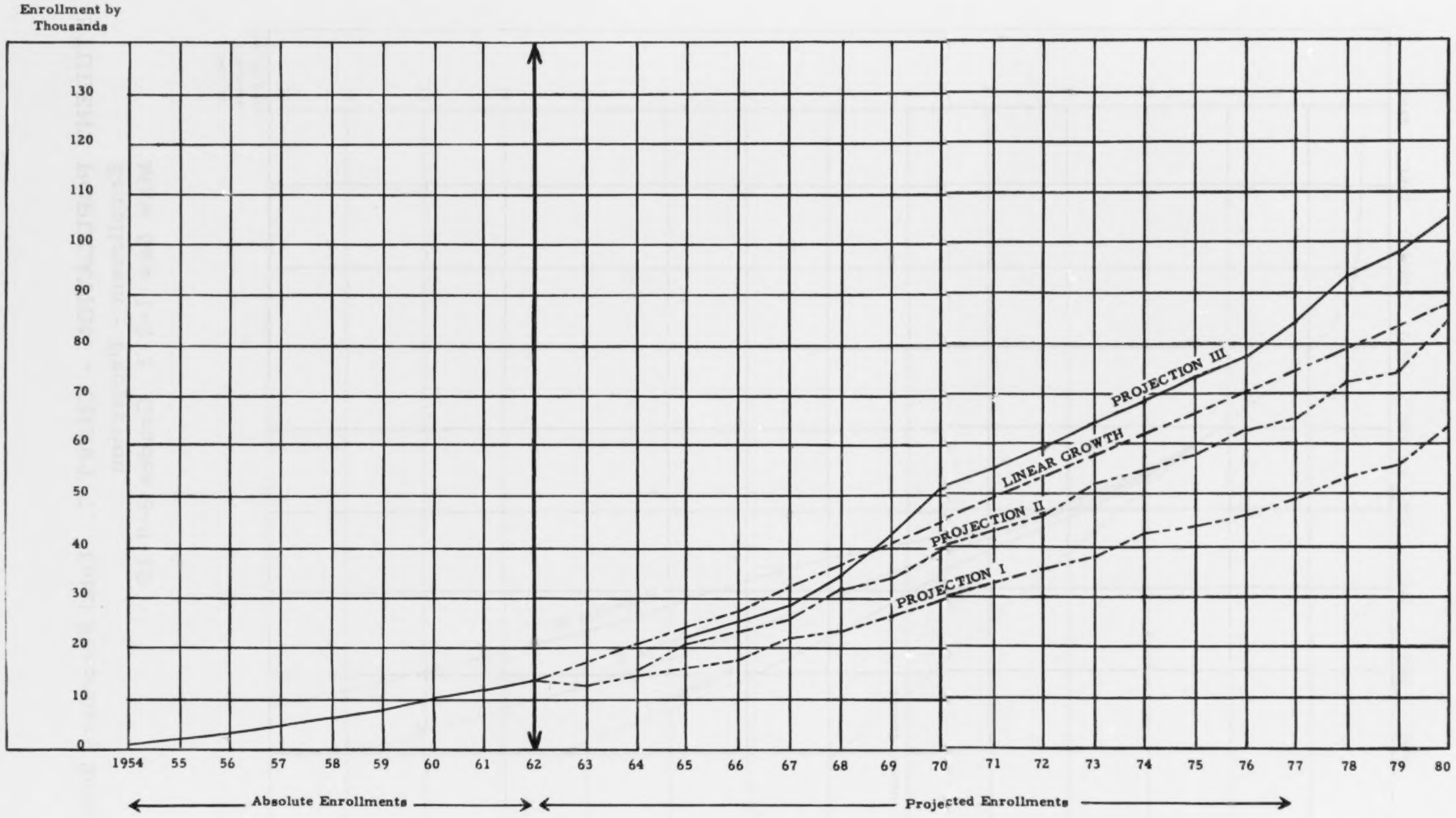


STUDENT POPULATION - CHART 6. Projected Enrollments in Pratom 1 - 4 to 1980

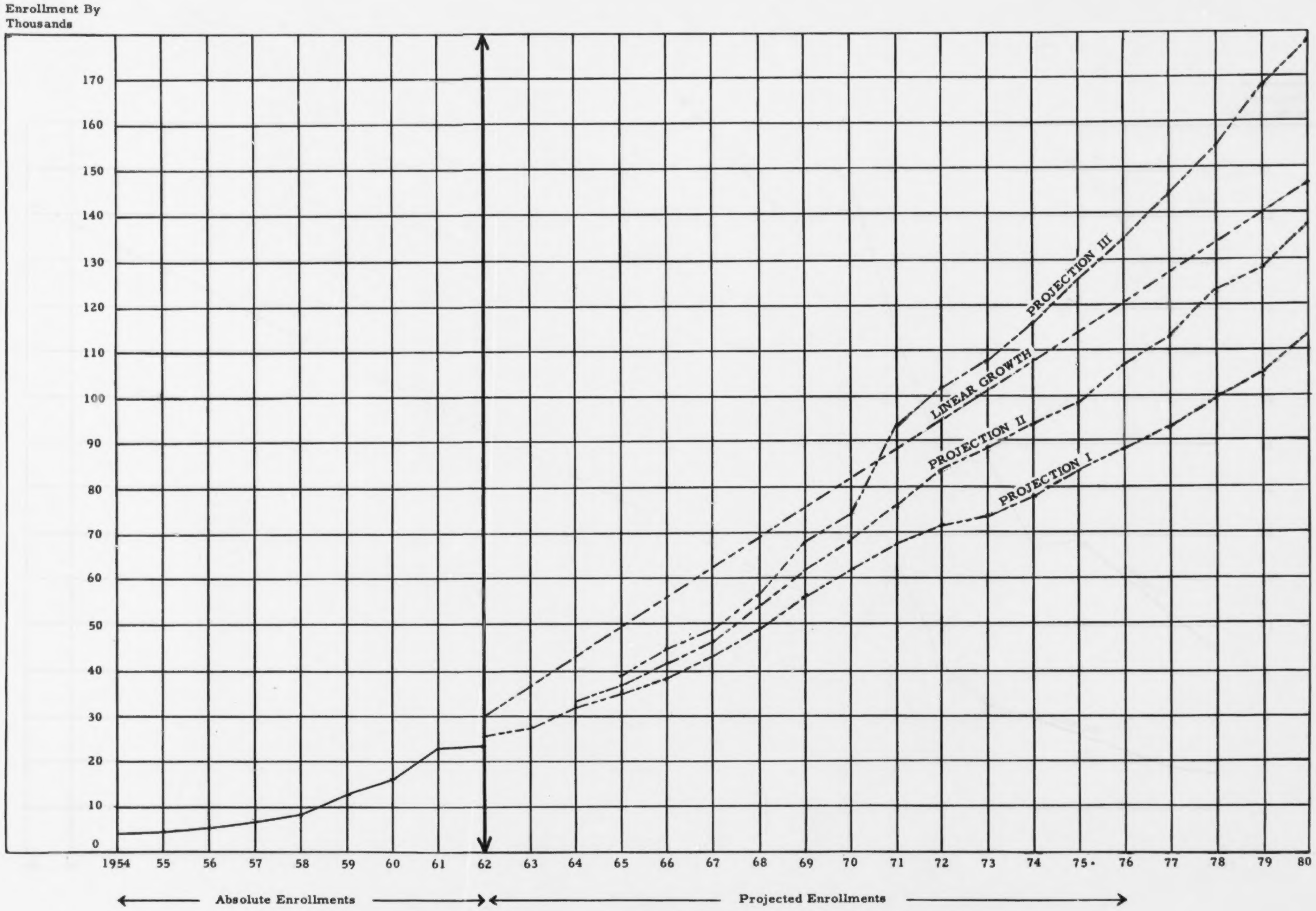


STUDENT POPULATION - CHART 7. Total Secondary School Enrollment - Projection Maw Saw 1-2-3 Grades 8-9-10

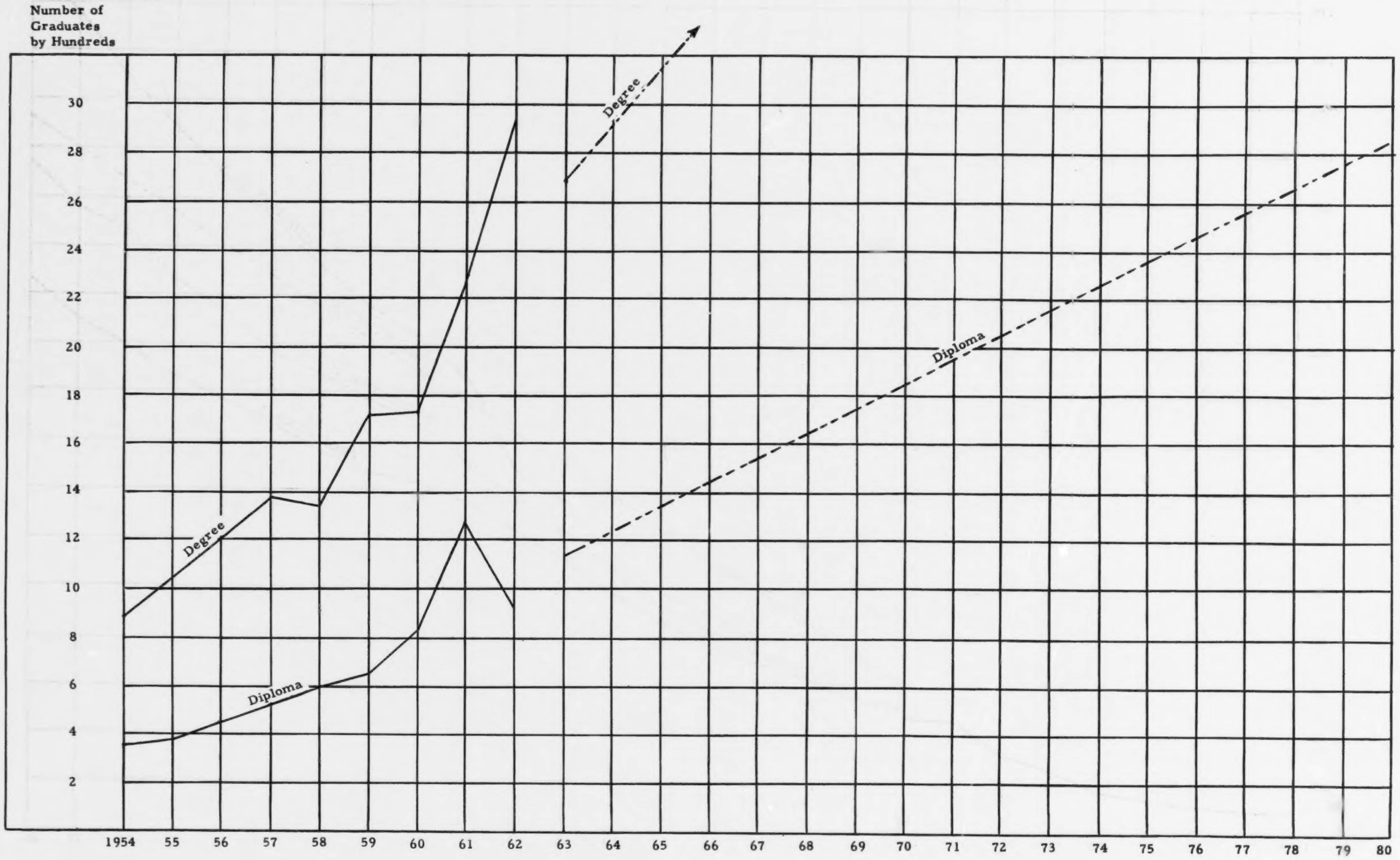




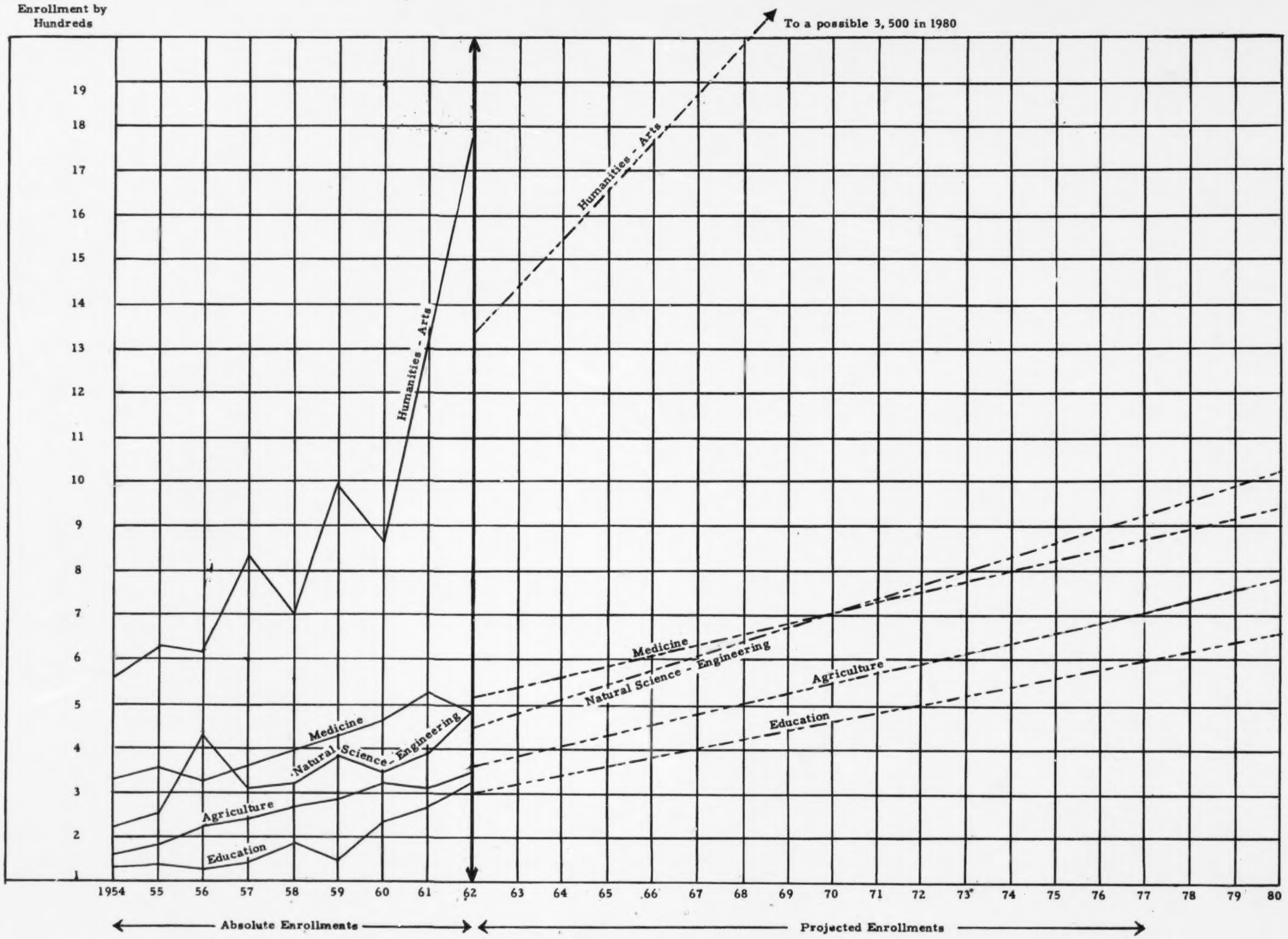
STUDENT POPULATION - CHART 8. Secondary School Enrollment, Projected (MAW SAW 4 - Grade 11)



STUDENT POPULATION - CHART 9. Secondary School Enrollments, Projected (MAW SAW 5 - Grade 12)



STUDENT POPULATION - CHART 10. Number of University Graduates, Projected.



STUDENT POPULATION - CHART 11. Number of University Graduates, Projected by Fields of Study.

C

The Composition and Structure of The Teaching Force

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Miss Ratana Tanboontek
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254/56

THE COMPOSITION AND STRUCTURE OF THE TEACHING FORCE

This working paper will include (1) the latest and most accurate data and information available on the teaching force, including longitudinal data extending in some cases back to 1946 in order to indicate trends and changes, (2) data projections through the target date, taking into account the factors which modify the projections, and (3) comments on the data and information in order that it may be better understood within the Thailand context. This paper, then, describes the present teaching force, the past trends leading to the present, and likely future projections.

Prediction of future education, on which teacher needs can be based, involves consideration of many factors, such as changes in economic conditions, teacher promotion policies, birth rates, transient population, compulsory education age, trends in enrollment, desire for education, and selection policies at various levels of entrance into further education. The number of variables make prediction hazardous, particularly for long periods in advance; however, in this study the best data available has been used in making predictions through 1980.

Size of The Teaching Force

In order to set the stage for reasonable predictions, we should look at the present and past dimensions of the teaching force. First, let us consider the size of the teaching force by educational levels.

In table 1 the breakdown is given in terms of the institutional level for both male and female teachers. Seven hundred eighty-six known teachers of Dramatic Art, Fine Art and Practical Arts are not included in this table. It will be seen that 73% of the government elementary school teachers are men and 27% women. The total elementary school teachers including Kindergarten, local, Municipal and Senior Grades Elementary (Primary Extension) represent 2/3 of all teachers in Thailand.

More women than men are teaching in Secondary School (55%) and in Teacher Education Institutions (56%). However, the difference is not nearly as great as in the elementary school, 10% and 11% respectively. Chart 1 shows graphically the male-female ratio of the teaching force in 1961 for each major area of teaching. The data reinforces and clarifies the data of table 1.

Secondary teachers represent 6.5% of the total number, while teachers of Teacher Education institutions represent 1.2% of the total number of teachers. Teachers in private institutions, at all levels, are counted as one group; so a breakdown into elementary, secondary and other institutions cannot be made. Teachers in private institutions represent 20.5% of the total number of teachers.

Table 1 and chart 1 would suggest that women are not fully participating as primary teachers and that a potential pool of female teachers is available to staff primary schools.

If this potential pool of new teachers is to be made available more females with secondary education will likely be needed. In Teaching Force Table 2 enrollment figures for school population show the relative percentages of male and female groups. (The table also indicates that almost 85% of the total school population is in the elementary school.) The balance between male and female students is fairly even at this level, actually 52% to 48% in favor of males. However, when a look is taken at the balance between male and female students on the secondary level, the picture has changed to a situation heavily weighed in favor of male students, who are 61% of the total. When the enrollment is examined at the teacher training level, we find the balance again in favor of the male students. These data substantiate the implications of table 1 and indicate that if more women are to be available as primary teachers, more female students should be attending schools on the secondary level and should be encouraged to enter teacher training.

A longitudinal study may be made of data in Table 3 which shows the size of the teaching force over the period from 1950 to 1962. Occasionally the data are spotty, due largely to the differences in grouping and to the beginning or ending of specific programs.

Table 3 indicates that the increase in the number of kindergarten teachers from 1952 to 1962 was 367 or 290%. The increase in the number of elementary teachers during 1950-1962 was 24,867 or 36%. The increase in the number of secondary school teachers from 1952-1961 was 4,998 or 56%. Over the seven years 1954-1960 the vocational department increased their number of teachers 2,832 or 49%.

During the period 1952-1961 the Department of Teacher Training increased its number of teachers from 385 to 1,727, or 1,431 teachers and 83%. The number of private school teachers increased by 22,111 during the years 1950-1962 or 70%. The increase in the total number of teachers from the 5 universities was 1,706 or 78% from 1950-1960. The total increase of all teachers, excluding those in Higher Education, was 57,461 or 41%.

Table 4 shows the pattern of growth in the faculties of higher education. Also significant in table 4 is the exceedingly high number of less than full time teaching personnel. The total number of full time faculty represent only 62% of the total. Chulalongkorn University and the University of Medical Science have a higher percentage of full time faculty members than other institutions. The small number of full time faculty at Thammasat University, the University of Agriculture, and the University of Fine Arts definitely raises some doubt about developing well rounded programs for students. There has been some improvement in this matter in the seven years as indicated in table 4; all but the University of Agriculture showed an increase in the percentage of full time faculty. Thammasat University has moved from 5 to 14% of its faculty on a full time basis, while Chulalongkorn has increased its full time faculty from 25 to 76 per cent.

In summary, data gathered concerning the size of the teaching force would seem to indicate:

1. That a sizeable number of teachers for the primary school could well be recruited from the female population. More female students should be encouraged to enroll in secondary education to facilitate teacher recruitment.

2. That the trends in size of the teaching force is increasing rapidly since 1950. The 83% increase in the teaching force under the Department of Teacher Training indicates tremendous development of facilities and faculty.

3. That higher educational institutions are improving their ratio of full time teachers to total number of teachers, but that, in most institutions much improvement is needed.

Qualifications of Teachers

In order to understand the qualifications of teachers in Thailand, one must investigate the type of training required for certification. Many types of institutions prepare teachers. The following summary is a detailed description of the various ways teachers may receive certification by attending various types of institutions:

Types of Teacher Training Establishments Producing Teachers with Certificates of Education on the Paw Paw Saw Level

ESTABLISHMENTS	ENTRANCE PRE-REQUISITE	COURSE DURATION	QUALIFICATIONS
1. Teacher Training Schools or Colleges under the Teacher Training Department	Lower Mathayom Suksa (M.S. 3)	2 years	Certificate of Education. (Paw Paw Saw)
2. Physical Education Teacher Training School under the Physical Education Department.	Lower Mathayom Suksa	2 years	Certificate of Education (Physical Education)
3. Art School under the Department of Fine Arts.	Lower Mathayom Suksa	3 years	Certificate in Art Education (Paw Paw Chaw's equivalent)
4. Arts and Crafts School under the Department of Vocational Education	Lower Mathayom Suksa	3 years	Prathom Teacher Certificate in Arts and Crafts (Paw Paw Chaw)
5. Chombung Village Institute under the Department of Teacher Training	Upper Prathom	5 years	Certificate of Education (Paw Paw Saw)

Teacher Training Establishments Producing Teachers with Higher Certificates or Diplomas of Education.

1. Teacher-training colleges under the Department of Teacher-Training	A) Certificate of education or Prathom Teacher (Contd.)	2 years	Higher Certificate in Education (Higher Paw Paw Saw)

ESTABLISHMENTS	ENTRANCE PRE-REQUISITE	COURSE DURATION	QUALIFICATIONS
1. (Contd....)	(elementary teaching) Certificate (Paw Paw) or its equivalent or Upper Mathayom Suksa (M.S.S.)		
	B) Certificate of Education or Certificate of Education (Home Economics) or Kindergarten Teacher Certificate or Domestic Science Certificate	2 years	Higher Certificate of Education (Home Economics)
	C) Certificate of Education or Certificate of Education (Home Economics) or Kindergarten Teacher Certificate or Domestic Science Teacher Certificate	2 years	Higher Certificate of Education (Kindergarten Education)
2. College of Education under the Department of Teacher Training	Certificate of Education Upper Mathayom Suksa or Prathom Teacher Certificate.	2 years	Diploma of Education (Aw Paw Saw)
3. Physical Education College under the Department of Physical Education.	Upper Mathayom Suksa or its equivalent.	2 years	Higher Certificate of Education (Physical Education)
4. The Department of Vocational Education's Teacher Training College.	Higher Vocational Education Certificate.	2 years	Secondary (Mathayom) Vocational Teacher Certificate

Continued

ESTABLISHMENTS	ENTRANCE PRE-REQUISITE	COURSE DURATION	QUALIFICATIONS
5. The Department of Vocational Education.	A) Higher Vocational Education Certificate or Elementary (Prathom) Vocational Teacher Certificate (Paw Paw Chaw).	2 years	Secondary (Mathayom) Industrial Arts Teacher Certificate
	B) Higher Vocational Education Certificate.	1 year	Secondary (Mathayom) Vocational Teacher Certificate
6. The Department of Vocational Education's Arts & Crafts School.	Prathom Teacher in Arts and Crafts. (Paw Paw Phaw)	2 years	Secondary (Mathayom) Arts and Crafts Teacher Certificate.
7. The Department of Vocational Education's Chiengmai Agricultural College	Higher Vocational Education (Agriculture) or Elementary (Prathom) Agricultural Teacher Certificate.	2 years	Secondary (Mathayom) Agricultural Teacher Certificate.
8. Chulalongkorn University, Faculty of Education.	Completion of Second year in any Faculty of a Chulalongkorn University Degree.	1 year	Diploma of Education

Institutes Producing Degree Teachers

1. The Department of Teacher Training College of Education.	A) Certificate of Education or Elementary Teaching Certificate or its equivalent or Upper Mathayom Suksa.	4 years	Bachelor of Education
	B) Diploma of Education or Secondary Teaching Certificate or its equivalent or Higher Certificate of Education	2 years	Bachelor of Education
Continued			

INSTITUTION	ENTRANCE PRE-REQUISITE	COURSE DURATION	QUALIFICATIONS
1. (Continued)	C. Bachelor of Education with average marks of at least 2.5	2 years	Master of Education
2. Chulalongkorn University's Faculty of Education	A. Upper Mathayom Suksa or its equivalent	4 years	Bachelor of Education
	B. Higher Certificate of Education	2½ years	Bachelor of Education
	C. Bachelor's Degree or completion of the third year in any faculty.	2 years	Bachelor of Education
	D. Diploma of Education or Secondary (Mathayom) Teaching Certificate or External Secondary Teaching Certificate.	1½ years	Bachelor of Education
	E. Bachelor of Education with average marks of not less than 3 or 75%.	2 years	Master of Education

(See Chart showing Teacher Training System of Thailand under the 1960 National Scheme of Education)

Chart 2 shows the ways in which prospective teachers received education towards teacher certification. The flow of students through the system is indicated. It is obvious that most teachers who receive any formal education in order to become teachers are graduated on the lowest certification level. Many graduate with either the higher certificate or diploma and a few graduate with a Bachelor's degree. Only a few students graduate with the Master's degree.

The Department of Teacher Training aims at producing enough teachers in order (1) to cope with the expansion of education due to the population increase, (2) to satisfy the increasing desires of people to have their children remain in school longer, (3) to compensate for the loss of teachers through retirement and death, (4) and to support the national economic development plan.

Table 5 shows the number of teachers produced during the period 1958-1962 as well as the total number of students attending teacher training institutions during the same period. Fluctuations in the numbers produced under any one category make trends a little difficult to project. However, there is a steady trend upward in the total production of teachers during the 5 years. It is significant to note that there has been an increase of 3,353 students enrolled during the five-year period.

In the production of teachers regard is paid not only to the planned increase, but to the quality as well. As far as the improvement of quality is concerned, several measures have been introduced. There has been a re-adjustment of the teacher training curricula with emphasis shifted to the academic side. Introduced for the training of rural teachers is a project which prepares and equips student teachers for an efficient teaching career in rural areas. There have also been efforts to widen the knowledge and experience of teachers in-service, to raise their academic qualifications, and to send newly-appointed teachers with high academic qualifications to teach in teacher training institutions.

Table 6 shows the increase in faculty qualifications in teacher training institutions over a period of five years. Note that the increase of faculty holding doctorates and masters has been 179 or 203 +%. The increase in the number of bachelors degree holder was 395 or 150 +%. Table 6 also indicates that the total number of teachers in teacher training institutions has increased from 1,147 to 1,823 - a total of 676 or 59%.

Another way of reflecting the qualifications of teacher training faculties is from an examination of the levels of Certificates held. Table 7 shows the certification or degrees held by teachers of the teacher training schools in 1962.

Sixty-nine per cent of the teachers in teacher training schools or colleges have received the bachelors degree or better. Nineteen per cent have earned certificates of secondary education. Six per cent have received certificates of elementary education, and six per cent have other certificates. Only 8 people have a certificate of pre-primary education. Chart 5 shows this picture graphically.

Table 8 shows the qualifications by degree or certificate of the secondary school teachers. It may be seen in Table 8 that the largest number, 4,135 of the total 7,731 teachers, hold a certificate of secondary education. Holding a certificate of secondary education means that the teacher has 14 years of education. Twenty-eight (28) per cent of the secondary teachers hold certificates of elementary education. Twelve per cent of the teachers have their bachelor's degree or better. If a person with a less than a certificate in secondary education is considered unqualified to teach, this means approximately 34% of the teachers in secondary schools are unqualified. Chart 4 shows this information graphically.

In Table 9 the qualifications of the elementary teachers are given by certification or degree earned. Less than one per cent of the elementary teachers have earned bachelor's or higher degrees. Four per cent have received the secondary certificate and only 23% have received the certificate of elementary education. This certificate of elementary education is the equivalent of twelve years of training.

Any certification below the elementary certificate may be considered inadequate for qualifying a person to teach. On this basis approximately 72% of the elementary teachers were not qualified by training in 1962. Chart 5 represents the relevant data.

Table 10 shows the qualifications of the vocational teachers. Note that a slightly higher per cent (14%) of the vocational teachers have bachelors or higher degrees than secondary teachers, 12% of whom hold Bachelor or higher degrees. Seventeen per cent of the vocational teachers hold certificates of secondary education. These three groups, if considered qualified, represent 71% of the total vocational teachers. Those who hold certificates of elementary education or lower might be considered unqualified. This group is 29% of the total. Chart 6 shows in graphic form the relative size of the groups of different certification of vocational teachers.

Table 11 shows the relative sizes of the qualified and unqualified teachers in each educational institution in 1961. It indicates that 56% of the teachers with less than certified qualifications teach in private schools. In vocational schools 49% are unqualified, and in elementary schools 46%. Secondary and teacher training have almost equal percentages of teachers unqualified, 36% and 35% respectively. A high percentage of physical education, kindergarten and handicapped teaching staffs are qualified. Table 11 indicates that programs planned for improvement in the teaching force can well begin at the level of pre-service and in-service training for elementary, private (largely elementary), and vocational school teachers.

While Table 11 shows data for 1961, Table 12 shows the same type of data for 1962. In comparing the data in Tables 11 and 12, one can see improvement in the number of qualified teachers in all areas except vocational education. Over all there was an improvement of 4% from 1961 to 1962 in the total number of qualified teachers.

Both Tables 11 and 12 have assumed the following criteria for determining teacher qualifications for teaching on a particular level:

Kindergarten	Qualified.....	Paw Preprimary Teacher Certificate
Local and Municipal	"	Paw Preprimary Teacher Certificate
Senior Grade Elementary	"	Paw Paw Elementary Teacher Certificate
Secondary Education	"	Paw Maw Secondary Teacher Certificate
Teacher Education	"	Bachelor Degree
Vocational Education	"	Paw Paw Elementary Teacher Certificate
Physical Education	"	Paw Maw Secondary Certificate
Handicapped	"	Paw Preprimary Teacher Certificate
Private	"	Paw Preprimary Teacher Certificate
Dramatic Arts	"	Paw Paw Elementary Teacher Certificate
Fine Arts	"	Paw Maw Secondary Teacher Certificate

In summary, this chapter has attempted to explain the different types of teacher certifications, where these certificates may be achieved and on what level they may be achieved. In terms of these certificates an analysis of the certifications of teachers on the levels of kindergarten, elementary, secondary, teacher training, vocational, private and physical education was made to determine those qualified and those unqualified to teach in the schools of Thailand. The size of the teaching force that is unqualified particularly at the elementary, vocational and private schools is quite large, 41 to 53%. If improvement in education is to be made, certainly this large portion of the teaching force should receive upgrading. Also, enough teachers must be produced each year so that less than qualified teachers do not need to be hired. It is commendable that improvement has been made in teacher qualifications at the college level. The number of teachers at the college level who have bachelor degrees, masters and doctorates has improved greatly in the last 5 years. It would seem desirable that the graduate program be expanded to continue the trend. Advanced degree teachers are needed when the teacher training institutes increase their offerings beyond the 12th year and 14th year.

PRODUCTION OF TEACHERS

In the production of teachers to meet the demands of the schools of Thailand, the Department of Teacher Training plans for quantity, quality and efficiency in an effort to supply teachers for elementary, secondary, and teacher training institutions. As the department carries on its work, the following problems are considered: the number of teachers lost to the profession by reasons of death, retirement and change of profession, population increase, the increase in people's interest in and demand for education, the government's policy regarding the expansion of education, and the country's economic condition. All these factors influence the demand for teachers. Quality and efficiency are encouraged by constant review and evaluation of curricula, advanced training for both faculties and administration, and increased provision for in-service training.

In this chapter an analysis is made of data concerning the in-put and out-put of students at Teacher Training institutions, the placement of college graduates, the numbers of students enrolled and graduated from all levels of instruction, losses through retirement and death, wastage factors, and the capacity of existing teacher training institutions.

In Table 13 we trace the potential teacher through an educational career from the time he enrolls until he graduates from his master's degree program. The data needed to accomplish this exercise was complete only for the 1946 enrollment year. Although data were gathered for an eighteen year period, only four spans were included due to the incompleteness of information available. The purpose of this table is to place the numbers of students needed on lower levels in order to produce given numbers of graduates at higher levels.

By dividing the number of graduates into the number enrolled originally in Pratom 1, the following interesting data emerges:

1. 1.84 pupils must enroll in pratom 1 in order to produce one graduate from pratom 1;

2. 2.8 pupils must enroll in pratom 1 in order to produce one graduate from pratom 4;

3. 29.7 pupils must enroll in pratom 1 in order to produce one graduate of matayom 6 (10th year).

4. 186.4 pupils must enroll in pratom 1 in order to produce one graduate with an elementary teaching certificate (12th year)

5. 541 pupils must enroll in pratom 1 in order to produce one teacher with a diploma in education (14th year).

6. 739 pupils must enroll in pratom 1 in order to produce one teacher with a Bachelor's degree.

7. 44,302 pupils must enroll in pratom 1 in order to produce one teacher with a master's degree.

8. 66 pupils must graduate from pratom 4 in order to produce one teacher with a certificate of education.

9. 17 pupils must graduate from matayom 6 (10th grade) in order to produce one teacher with a diploma of education.

10. 25 pupils must graduate from matayom 6 in order to produce one teacher with a bachelor's degree.

Ratios computed by the means described above may be applied to the number of additional enrollees and graduates needed at any particular level to produce graduates needed at any higher level.

The number of teacher education students enrolled, by institution, and later graduated with certificates of education is shown in Table 14 for each of the four, two-year periods of time beginning in 1958 and ending in 1963. Differences were computed between the total number enrolled and the total graduated. This difference, representing the total drop-out, was then computed as a per cent of the total enrolled. It was found that 80, or 1.8 per cent, of the students enrolled in 1958 did not graduate in 1960; 335, or 5.0 per cent, dropped out between 1959 and 1961; 292, or 5.9 per cent, dropped out between 1960 and 1962; and 310, or 5.4 per cent, dropped out during the period 1961-1963. These data show a very high rate of retention, which certainly reflects efficient operation on the item of selection and retention.

A similar table, number 15, was constructed to show the retention of students enrolled in the program leading to the diploma of education. Following the same kind of computation described for Table 14, it was found that all but 27, or 3.0 per cent, of the students who enrolled in 1957 graduated in 1959; 33, or 3.4 per cent, of the students enrolled in 1958 did not graduate in 1960; 118, or 7.5 per cent, of the students enrolled in 1959 did not graduate in1961; 160, or 10.6 per cent, of the student enrolled in 1960 did not graduate in 1962; and 49 of those enrolled in 1961 did not graduate in 1963. The percentage of retention was very high, 89.4 per cent or better, over a five year period of time, again reflecting the efficiency of the program in terms of retention. No clear picture may be drawn from available data on in-puts and out-puts of graduates in the bachelor's or master's programs.

The College of Education at Prasarnmitr, Prathumwan, and Bang Saen started producing graduates with the bachelor's degree in Education in 1954. These degree people, from the study of the eight groups that had graduated by Spring, 1962, are reported to be working all over Thailand according to the Educational Research Department at Prasarnmitr.

The total number of graduates surveyed in this study was 2,582. Information was collected (1) from the registrar's office of the branches of the College of Education, and (2) from the registrar's office of the various agencies of the Ministry of Education. Data were found covering 2,282 of the 2,582 graduates, which represents 83.38 per cent of this total group. The following table shows the kinds of departments in which these graduates are employed:

Number of B.Ed Graduates Working under Supervision of Different Departments

Order	Departments	No.	%
	T O T A L	2,282	100.00
1	Secondary Education	815	35.71
2	Teacher Training	716	31.38
3	Private Schools	236	10.35
4	Elementary Education	221	9.68
5	Vocational Education	179	7.84
6	Office of Under-Secretary, M.O.E.	92	4.03
7	Ministry of Defense	17	0.74
8	National Research Office	2	0.09
9	Physical Education	1	0.04
10	Tourist Promotion Organization	1	0.04
11	Siriraj Hospital	1	0.04
12	Prasart Hospital	1	0.04

In Chart 9 we note the relatively high percentage of the graduates who are employed under the Department of Teacher Training and Secondary Education, 31.38 per cent and 35.71 per cent respectively. Actually, only .86 per cent of the 2,282 bachelor's degree graduates for all eight years are employed outside the education field.

Table 16 shows the placement of degree graduates, 1954-1962, listed by rank of numbers. A total of 99 per cent of these degree graduates are working directly in educational programs.

The following table shows the number of graduates from the bachelor's degree program who are working at the College of Education. One hundred forty-two graduates or 6.2 per cent of those reporting, are doing college teaching in degree-granting colleges:

Number of B. Ed. Graduates Working in the College of Education

Order	College	No.	%
	TOTAL	142	100.00
1	College of Education, Prasarnmitr	77	54.22
2	College of Education, Bang Saen	49	34.51
3	College of Education, Patoom Wan	16	11.27

Chart 10 shows the number and percentage of the 2,282 graduates with bachelor's degrees who are employed in the various educational regions of Thailand. It is interesting to find that these graduates are employed in 70 of the 71 changwads. Certainly the level of education all over Thailand is being improved by these young educators.

Information concerning the actual total loss in the teaching force is not available, except for the year 1961. This report states that there were a total of 137,748 teachers in 1961 and that the loss due to retirement, death, and change of profession was 4,734 teachers. This loss is 3.4 per cent of the total. This figure fits nicely between the figures of 2 - 5 per cent which are often used for predicting such loss.

PREDICTION OF FUTURE NEED FOR TEACHERS

In preface to the description of the chart concerning prediction of future needs it should be reported that the information comes from a private source rather than an official one. However, the writer's findings lend support to the fact that there is considerable evidence that the background information with which the predictions are made, agrees with the official ones.

Certain assumptions must be remembered when the observer studies the table 17. First, the population was assumed to be increasing at the rate of 2.95 per cent per year. Other predictions examined used different increased rates ranging from 2.6 per cent to 4 per cent. Second, there is and will be an increasing interest in education by the general public. Third, the background data on school population is reasonably accurate. Fourth, the compulsory education act's provision will become a reality. Fifth, the budget allocations will likely materialize. Sixth, the teacher loss through death, retirement, and resignation will continue according to a trend.

All data in Table 17 were projected from the predicted population between the years 1961-1980. The population of Thailand was computed using 2.9 per cent as the rate of increase. The total school population (column 2) was found by multiplying the total population number by the rate found in column 3. The rate factors in column 3 were based on the assumption that the studies of Japan's school population were accurate. Column 4 was calculated by using the ideal condition that the pupil-teacher ratio should be thirty to one. Actually in the last ten years the pupil-teacher ratio has varied from thirty two to one to thirty four to one.

The annual increase in the number of teachers in column 5 is the difference in the number of teachers required for any two successive years. Teacher loss in column 6 was computed at the rate of 2 per cent each year from 1961-70, and 3 per cent each year from 1971-1980. The number of new teachers required (column 6) was found by adding the number of teachers from the increase (column 5) to the number of teachers lost (column 6). The number of students in training (column 8) was calculated by multiplying the number of new teachers required (column 7) by 2.5, a factor assumed to represent the ratio of prospective teachers to actual ones. Column 9 contains the maximum number of places for students at training colleges. The new teachers produced, column 10, was found by dividing the maximum number of places provided for the training of students by 2.5,(Column 9). The number of teachers required, minus the maximum that can be produced, gives the number of teachers that must be produced by an emergency program.(column 11).

In the opinion of the investigators attention should be focused on the fact that the predictions were made on the available data. In the future the following data would improve the chances of making accurate predictions: the ages of teachers, the sex of teachers, the qualifications of teachers, plans and estimates regarding the expansion of private schools, consistent reporting and recording of data, flow of students from one level to another, growth of national income and product, availability of manpower studies on need and supply, and expansion programs of other Departments and Institutes

The prediction in Table 17, then based on the available data and information, may not turn out to be as accurate as would be liked. Better predictions may be made in the future when more data are available.

TEACHING FORCE

List of Tables

TABLE #

1 ..... Size of the Teaching Force by Institution, 1961.

2 ..... Size of the Student Population by Educational Level, 1961.

3 ..... Size of the Teaching Force, 1950-1962.

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11 ..... Qualified and Unqualified Teachers, 1961.

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13 ..... Graduates From Each Level of Instruction For Four Classes Beginning 1944-1947.

..... Continued

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14 ..... Input - Output of Student Teachers at Certificate in Education Level.

15 ..... Input - Output of Student Teachers at Diploma in Education Level.

16 ..... Number of B.Ed. Graduates Working Under Supervision of Different Departments.

17 ..... Predicted Number of Teachers and Students in Training for 1961-1980 (B.E. 2504-2523).

TEACHING FORCE - TABLE 1

Size of the Teaching Force by Institution, 1961

		Male		Female		Total
		No.	%	No.	%	
Kindergarten	Elementary	2	.4	501	99.6	503
Local & Municipal		59,561	77	17,788	-23	77,349
Senior Gr. Elemen. (Primary Extension)		7,702	55	6,189	-45	13,891
		67,265	73	24,478	27	91,743
Secondary Education		4,078	45	4,925	55	9,003
Teacher Education		759	44	957	56	1,716
Vocational		3,117	65	1,671	35	4,788
Physical Education		29	62	18	38	47
Haddicapped		93	44	120	56	213
Private		13,106	46	15,240	54	28,346
*Others		1,299	68	593	32	1,892
Total ...		89,746	65	48,002	35	137,748

Table 4 Total 138,534 includes figure for Dramatic Art, Fine Art, and Arts.

*Educational Statistics 1961 pp. 19-24.

Tables 15-20.

TEACHING FORCE - TABLE 2.

Size of the Student Population by Educational Level 1961

Educational Levels.	Total	Male	%	Female	%	Ratio M/F
Kindergarten	28,805	15,352	53	13,453	47	1.14 : 1
Preprimary	16,800	8,639	51	8,161	49	1.06 : 1
Pratom 1 - 4	3,716,969	1,936,146	52	1,780,823	48	1.09 : 1
Pratom 5	137,054	83,549	70	53,505	30	1.56 : 1
Total Primary	3,854,023	2,019,695	52	1,834,328	48	1.10 : 1
Lower Secondary	238,899	146,568	61	92,331	39	1.59 : 1
Upper Secondary	236,244	146,276	62	89,968	38	1.63 : 1
Pre-University	34,512	20,506	59	14,006	41	1.46 : 1
Total Secondary	509,655	313,350	61	196,305	39	
Cert. in Education	10,952	5,594	51	5,358	49	1.04 : 1
Higher Cert. in Ed.	2,933	1,211	41	1,722	59	0.70 : 1
Diploma in Ed.	666	333	50	333	50	1 : 1
Voc.Elemen T.T.	684	580	85	104	15	5.58 : 1
Voc.Senior T.T.	602	526	87	76	13	6.92 : 1
Bachelor	824	449	55	375	45	1.20 : 1
Master	15	11	73	4	27	2.75 : 1
Cert. in Physical Ed.	262	224	86	38	14	5.89 : 1
Diploma in Physical Ed.	220	183	83	37	17	4.94 : 1
Total Teacher Training	17,158	9,111	53	8,047	47	1.13 : 1
Lower Voc.	666	433	65	233	35	1.86 : 1
Upper Voc.	16,880	11,505	68	5,375	32	2.14 : 1
Higher Voc.	29,327	19,031	65	10,296	35	1.85 : 1
Total Vocational Educ.	51,764	34,837	67	16,927	33	2.06 : 1
Others	71,969	43,336	60	28,633	40	1.51 : 1
Total ...	4,550,174	2,444,320	54	2,105,854	46	1.16 : 1

TEACHING FORCE - TABLE 3

Size Of The Teaching Force, 1950-1962

EDUCATIONAL LEVELS	1950 2493	1951 2494	1952 2495	1953 2496	1954 2497	1955 2498	1956 2499	1957 2500	1958 2501	1959 2502	1960 2503	1961 2504	1962 2505	1963 2506
1. Kindergarten			128	168	242	256	273	306	357	444	476	503	495	
2. Local and Municipal	(3,263 (65,596	(3,464 (69,817	(3,523 (72,014	(3,523 (73,794	75,671	78,667	78,922	81,245	84,450	88,531	89,535	77,349	88,130	
3. Elementary			24	22										
4. Senior Grades Elem.													5,596	
5. Primary Extension					498	711	1,125	2,148	2,372	3,154	4,293	13,891		
TOTAL Elementary	68,859	73,281	75,561	77,339	76,169	79,378	80,047	83,393	86,822	91,685	93,828	91,240	93,726	
6. Secondary Education			3,700	3,836	4,270	4,427	4,820	5,920	6,262	7,983	8,403	9,003	7,731	
7. Pre-University			305	323										
TOTAL Secondary			4,005	4,159										
8. Teacher Education Elem. Sec.			385	415	512	658	668	814	1,082	1,477	1,683	1,716	1,727	
9. Home Econ. & Others			1,219	1,343	Others 933	1,435	597	1,632	1,727	1,553	1,098			
10. Vocational Education	1,663	1,717			2,015	2,330	2,595	2,897	3,487	4,400	4,679	4,788	4,818	
TOTAL Vocational					2,945	3,765	3,192	4,529	5,214	5,953	5,777			
11. Physical Education												47	65	
12. Handicapped												213	199	
13. Govt. (including Secondary and Voc.T.T.	2,259	2,461												
14. Private	9,352	10,378	11,798	12,435	13,898	14,873	16,310	17,726	21,092	24,612	27,094	30,238	31,463	
15. Dramatic Arts													49	
16. Fine Arts													25	
17. 5 Universities	(438)	xx 562	569	613	1,245	1,245	1,493	1,691	1,789	1,848	2,189	-	-	
TOTAL ...	82,133	87,837	93,096	95,859	98,039	103,357	105,310	112,688	120,829	132,154	137,261	137,748	140,298	

xx not added into total

TEACHING FORCE - TABLE 4

SIZE OF TEACHING FORCE IN HIGHER EDUCATION WITH THE PERCENTAGE OF FULL-TIME STAFF, 1954-1960.

YEAR	CHULALONGKORN			THAMMASART			MEDICAL SCIENCE			UNIVERSITY OF AGRICULTURE			UNIVERSITY OF FINE ARTS		
	Total	Full-Time	%	Total	Full-Time	%	Total	Full-Time	%	Total	Full Time	%	Total	Full Time	%
1954	336	134	25	223	11	5	485	313	65	188	119	63	13	2	16
1955	295	138		229	6		482	334		197	136		42	6	
1956	352	179		274	12		578	423		236	113		53	3	
1957	528	326		284	12		546	414		277	142		56	8	
1958	562	322		316	21		632	478		205	133		74	14	
1959	519	330		343	33		640	496		265	156		81	19	
1960	609	462	76	327	46	14	814	660	81	330	173	52	109	30	27

TEACHING FORCE - TABLE 5

Number of Teachers Produced

LEVEL	ACADEMIC YEAR				
	1958	1959	1960	1961	1962
Certificate of Education	4,267	4,682	5,695	4,633	5,108
Higher Certificate of Education	1,022	1,046	1,632	1,316	1,402
Bachelor of Education	295	468	481	407	325
Master of Education*	-	7	-	14	14
Total Graduated	5,584	6,203	7,808	6,370	6,849
Total Number of Student Teachers	12,652	15,064	15,714	15,404	16,005

*Overseas educated teachers not included.

TEACHING FORCE - TABLE 6

Number of Teachers in Teacher Training Institutes Under the Department of Teacher Training Classified According to Qualifications

QUALIFICATIONS	ACADEMIC YEAR				
	1958	1959	1960	1961	1962
Doctorate and Master Degrees	88	152	187	231	267
Bachelor Degrees	385	611	808	839	980
Below Bachelor Degrees	674	714	689	646	576
TOTAL	1,147	1,477	1,684	1,716	1,823

TEACHING FORCE - TABLE 7

Qualifications of Teachers
Department of Teacher Training, 1962

QUALIFICATIONS	NUMBER			PER CENT
	TOTAL	MEN	WOMEN	
Degree Bachelor or Better	1,184	534	650	69
Certificate Secondary Education	324	143	181	19
Certificate Elementary Education	113	46	67	6
Certificate Preprimary Education	8	5	3	-
Other	98	34	64	6
TOTAL	1,727	762	965	100

TEACHING FORCE - TABLE 8

Qualification of Teachers
Department of Secondary Education, 1961

QUALIFICATION	NUMBER			PER CENT
	TOTAL	MEN	WOMEN	
Degree Bachelor or Better	954	298	656	12
Certificate Secondary Education	4,135	1,946	2,189	54
Certificate Elementary Education	2,144	903	1,241	28
Certificate Preprimary Education	115	73	42	1
Certificate Vocational Education	187	57	130	2
Other	196	110	86	3
TOTAL	7,731	3,387	4,344	100

TEACHING FORCE - TABLE 9

Qualifications of Teachers

Department of Elementary Education, 1962

QUALIFICATION	NUMBER			PER CENT
	TOTAL	MEN	WOMEN	
Degree Bachelor or Better	419	205	214	1
Certificate Secondary Education	3,443	2,272	1,171	4
Certificate Elementary Education	21,925	15,703	6,222	23
Certificate Preprimary Education	30,420	23,932	6,488	32
Certificate Vocational Education	9,311	5,855	3,456	10
Other	28,208	21,038	7,170	30
TOTAL	93,726	69,005	24,721	100

TEACHING FORCE - TABLE 10

Qualifications of Teachers
Department of Vocational Education, 1962

QUALIFICATION	NUMBER			PER CENT
	TOTAL	MEN	WOMEN	
Degree Bachelor or Better	670	315	355	14
Certificate Secondary Education	814	469	345	17
Certificate Elementary Education	884	575	309	18
Certificate Preprimary Education	66	54	12	2
Certificate Vocational Education	1,931	1,345	586	40
Other	453	345	108	9
TOTAL	4,818	3,103	1,715	100

TEACHING FORCE - TABLE 11

Qualified and Unqualified Teachers, 1961

INSTITUTIONS	UNQUALIFIED		QUALIFIED		TOTAL
	NUMBER	%	NUMBER	%	
Kindergarten	2	0	501	100	503
Elementary Education					
Municipal and Local	35,642	46	41,707	54	77,349
Primary Extension	6,684		7,207		13,891
Secondary Education	3,279	36	5,724	64	9,003
Teacher Training Education	606	35	1,110	65	1,716
Vocational Education	2,360	49	2,428	51	4,788
Physical Education	1	2	46	98	47
Handicapped	29	14	184	86	213
Private	16,788	56	13,450	44	30,238
TOTAL	65,391	47	72,357	53	137,748

TEACHING FORCE - TABLE 12

Qualified and Unqualified Teachers, 1962

INSTITUTIONS	UNQUALIFIED		QUALIFIED		TOTAL
	NUMBER	%	NUMBER	%	
Kindergarten	1	0	494	100	495
Elementary Education					
Local & Municipal	36,377	41	51,753	59	88,130
Senior Grade Elementary	1,646		3,950		5,596
Secondary Education	2,642	34	5,089	66	7,731
Teacher Education*	543	31	1,184	69	1,727
Vocational Education	2,450	51	2,368	49	4,818
Physical Education	1	2	64	98	65
Handicapped	24	12	175	88	199
Private	16,744	53	14,719	47	31,463
Dramatic Arts	21		28		49
Fine Arts	-		25		25
TOTAL	60,449	43	79,849	57	140,298

* Exclude number of teachers at University Level.

TEACHING FORCE - TABLE 13

Graduates From Each Level of Instruction For Four Classes Beginning 1944-1947

YEAR	Total Enrolled in Prathom 1	GRADUATES OF													
		Yr.	Prathom 1	Yr.	Prathom 4	Yr.	Matayom 6	Yr.	Matayom 8	Yr.	Cert. of Educ.	Yr.	Diploma of Educ.	Yr.	Bachelor's Degree	Yr.	Master's Degree
1944	650,300	44	477,598	47	193,035	53	13,352	55	3,030	55	-	57	-	59	667	60	-
1945	621,493	45	436,238	48	182,978	54	15,769	56	3,821	56	3,398	58	-	60	771	61	14
1946	620,233	46	395,703	49	221,496	55	20,857	57	5,110	57	3,328	59	1,202	61	839	62	14*
1947	617,735	47	361,763	50	243,793	56	26,605	58	5,282	58	5,693	60	1,159	62	-	63	-

* Data from this row was used for computation purposes.

TEACHING FORCES - TABLE 14

Input - Output of Student Teachers at Certificate in Education Level

TEACHER TRAINING INSTITUTIONS	(01)		(02)		(03)		(04)		(05)		(06)
	58-59 Input	59-60 Output	59-60 Input	60-61 Output	60-61 Input	61-62 Output	61-62 Input	62-63 Output	62-63 Input	63-64 Output	63-64 Input
1 Ban Bomdet	361	353	999	869	473	424	913	802	445		384
2 Sunanda	442	439	485	465	332	331	495	489	322		351
3 Suan Dusit	166	165	173	167	211	194	206	196	326		256
4 Phra Nakorn	107	102	210	200	214	204	229	184	250		226
5 Petchburiwidhya	195	194	217	213	212	209	215	212	227		223
6 Thonburi	177	177	111	107	240	224	129	110	232		133
7 Thepsatri	268	260	223	197	352	332	224	204	305		307
8 Chiengmai	181	182	278	277	281	275	283	275	352		398
9 Udorn	239	237	359	337	228	209	241	229	254		297
10 Ubol	314	318	482	457	330	309	421	418	359		504
11 Nakorn Rajsima	290	360	280	274	276	259	277	258	334		385
12 Songkhla	117	117	159	152	180	144	155	149	177		280
13 Pibulsongkram	208	207	209	203	214	207	211	205	247		318
14 Mahasarakham	240	236	284	277	246	248	278	280	279		351
15 Yala	106	106	121	107	223	205	178	174	243		220
16 Nakorn Pathom	84	84	88	84	74	72	81	79	80		111
17 Songkhla (Girls)	78	78	159	151	112	93	108	105	105		110
18 Nakorn Srithamaraj	39	37	165	135	196	191	178	178	211		212
19 Petchaburi	58	54	84	84	70	68	139	137	140		155
20 Ayudhya	118	110	160	157	138	133	164	158	150		210

TEACHING FORCES - TABLE 14 (Con)

Input - Output of Student Teachers at Certificate in Education Level

TEACHER TRAINING INSTITUTIONS	(01)		(02)		(03)		(04)		(05)		(06	
	58-59 Input	59-60 Output	59-60 Input	60-61 Output	60-61 Input	61-62 Output	61-62 Input	62-63 Output	62-63 Input	63-64 Output	63-64 Input	Output
21 Ayudhya (Girls)	106	101	160	160	140	125	182	171	129		152	
22 Nakorn Sawan	104	104	143	140	107	106	140	139	135		180	
23 Utaradit	110	107	120	120	103	99	139	119	108		186	
24 Chachoengsao	108	108	279	279	108	107	312	311	114		315	
25 Village Institute												
26 Vocational T.T.School	123	123	102	103	55	55	transferred to Vocational Educational Department					
27 Prachinburi	70	70	Closed and students sent to Chachoengsao									
T O T A L S ...	4,409	4,329	6,050	5,715	5,115	4,813	5,898	5,582	5,524		6,264	

TEACHING FORCES - TABLE 15

In-put - Out-put of Student Teachers at Diploma in Education Level

TEACHER COLLEGES	(00)		(01)		(02)		(03)		(04)		(05)		
	57-58 Input	58-59 Output	58-59 Input	59-60 Output	59-60 Input	60-61 Output	60-61 Input	61-62 Output	61-62 Input	62-63 Output	62-63 Input	63-64 Output	63-64 Input
1. Bansomdet	377	376	315	295	448	420	378	308	412	407	180		417
2. Sunanda	381	381	274	272	479	457	381	360	361	351	361		345
3. Suandusit			159	158	144	138	170	149	188	171	243		226
4. Chandra-Kasem	107	82	42	34	194	141	120	91	90	79	129		158
5. Thepsatri	49	48	100	98	121	119	121	117	109	109	114		120
6. Chiengmai							105	105	90	89	90		90
7. Udorn							68	56	60	60	52		61
8. Ubol			78	78	119	119	84	82	88	87	70		90
9. Nakorn Rajsima					78	71	83	82	65	62	40		32
10. Songkhla									68	68	120		120
11. Pibulsongkram									62	61	67		89
12.. Mahasarakham											63		62
Totals ...	914	887	968	935	1,583	1,465	1,510	1,350	1,593	1,544	1,529		1,810

TEACHING FORCES - TABLE 16

Number of B. Ed. Graduates working Under Supervision of Different Departments

Order	Departments	No.	%
	Total	2,282	100.00
1	Secondary Education	815	35.71
2	Teacher Training	716	31.38
3	Private Schools	236	10.35
4	Elementary Education	221	9.68
5	Vocational Education	179	7.84
6	Office of Under-Secretary, M.O.E.	92	4.03
7	Ministry of Defense	17	0.74
8	National Research Office	2	0.09
9	Physical Education	1	0.04
10	Tourist Promotion Organization	1	0.04
11	Siriraj Hospital	1	0.04
12	Prasart Hospital	1	0.04

TEACHING FORCE - TABLE 17

Predicted Number of Teachers and Students in Training for 1961-1980 (B.E.2504-2523)

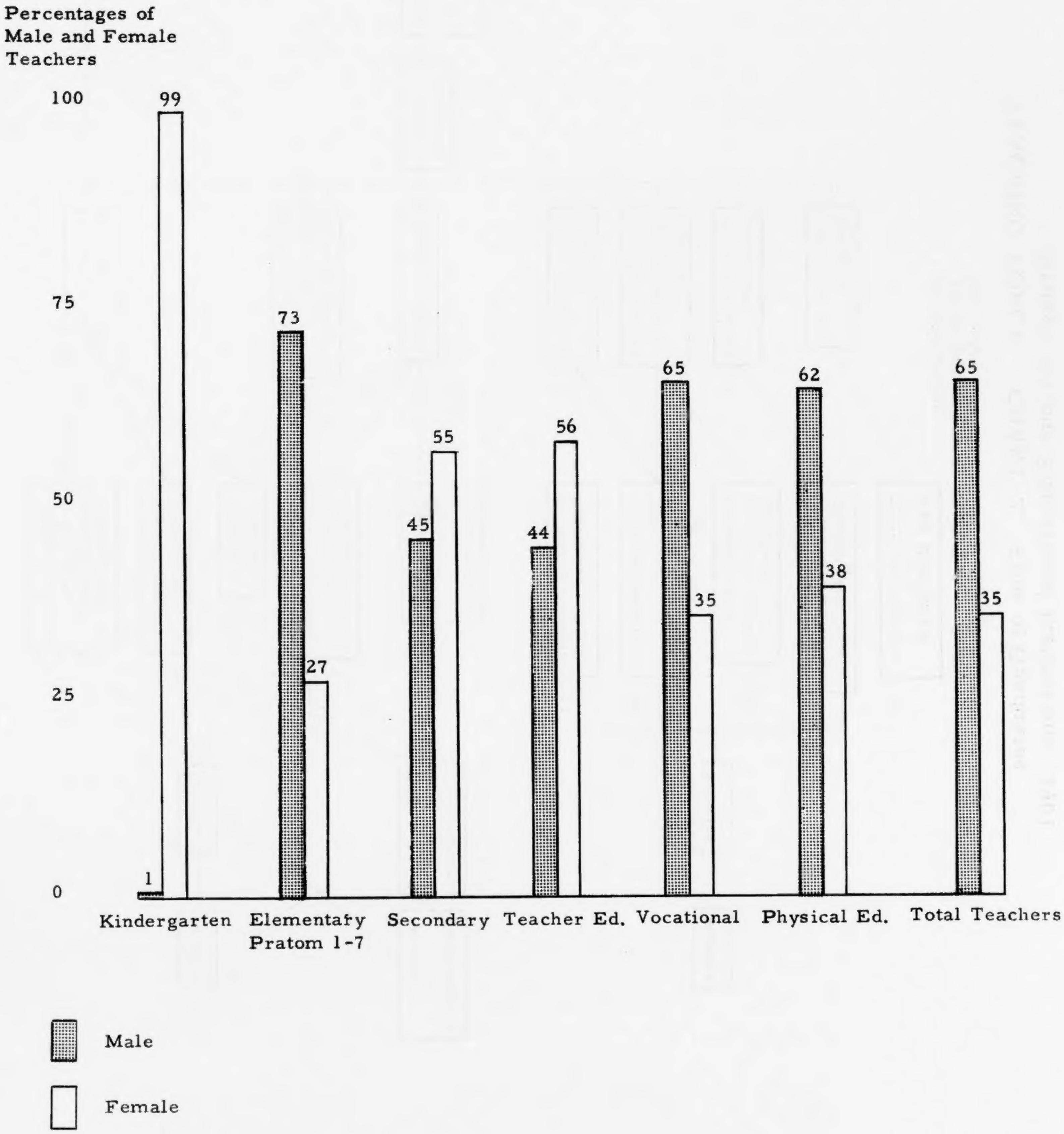
B.E.	A.D.	(1) Population Millions	(2) School Population	(3) Percentage (School Population to Total Population.)	(4) Teachers required (1:30)	(5) Annual Increase	(6) Teacher Loss 2%-3%.	(7) New Teachers required (5)+(6)	(8) Students in Training required (7)x2.5	(9) Max. No. of Places at Training Colleges	(10) New Teachers Produced (9)+ 2.5	(11) Supply form "Emergency Program". (7)-(10)
2504	1961	27.4	4,360,485	15.9	145,353							
2505	1962	28.3	4,560,000	16.1	152,003	6,650	3,040	9,690	24,225	16,248	6,266	3,424
2506	1963	29.2	4,739,000	16.2	157,970	5,967	3,949	9,916	24,790	16,500	6,499	3,417
2507	1964	30.1	4,938,000	16.4	164,603	6,633	4,938	11,571	28,928	18,000	6,600	4,971
2508	1965	31.0	5,146,000	16.6	171,533	6,930	5,128	12,058	30,145	22,000	8,800	3,258
2509	1966	31.9	5,349,000	16.8	178,304	7,351	5,349	12,700	31,750	26,000	10,400	2,300
2510	1967	32.8	5,599,500	17.1	186,654	8,650	5,600	14,250	35,626	30,000	12,000	2,250
2511	1968	33.8	5,860,000	17.3	195,337	8,683	5,860	14,543	36,356	34,000	13,600	1,143
2512	1969	34.8	6,172,000	17.7	205,737	10,400	6,172	16,572	41,430	38,000	15,200	1,372
2513	1970	35.9	6,524,000	18.2	217,471	11,734	6,524	18,258	45,646	42,000	16,800	1,458
2514	1971	36.96	6,874,560	18.6	229,152	11,681	6,874	18,555	46,388	46,000	18,400	111
2515	1972	38.05	7,229,500	19.0	240,983	11,831	7,229	19,060	47,650	50,000	20,000	-
2516	1973	39.17	7,598,980	19.4	253,299	12,316	7,599	19,915	49,788	52,000	20,000	-
2517	1974	40.32	7,983,360	19.8	266,112	12,813	7,983	20,796	51,990	54,000	21,600	-
2518	1975	41.51	8,385,020	20.2	279,501	13,389	8,385	21,774	54,435	56,000	22,400	-
2519	1976	42.73	8,802,380	20.6	293,413	13,912	8,802	22,714	56,785	58,000	23,200	-
2520	1977	43.99	9,237,900	21.0	307,930	14,517	9,238	23,755	59,388	60,000	24,000	-
2521	1978	45.29	9,692,060	21.4	323,069	15,139	9,692	24,831	62,078	62,000	24,800	-
2522	1979	46.63	10,165,340	21.8	338,845	15,776	10,165	25,941	64,853	64,000	25,600	-
2523	1980	48.01	10,658,220	22.2	355,274	16,429	10,658	26,087	65,218	66,000	26,400	-

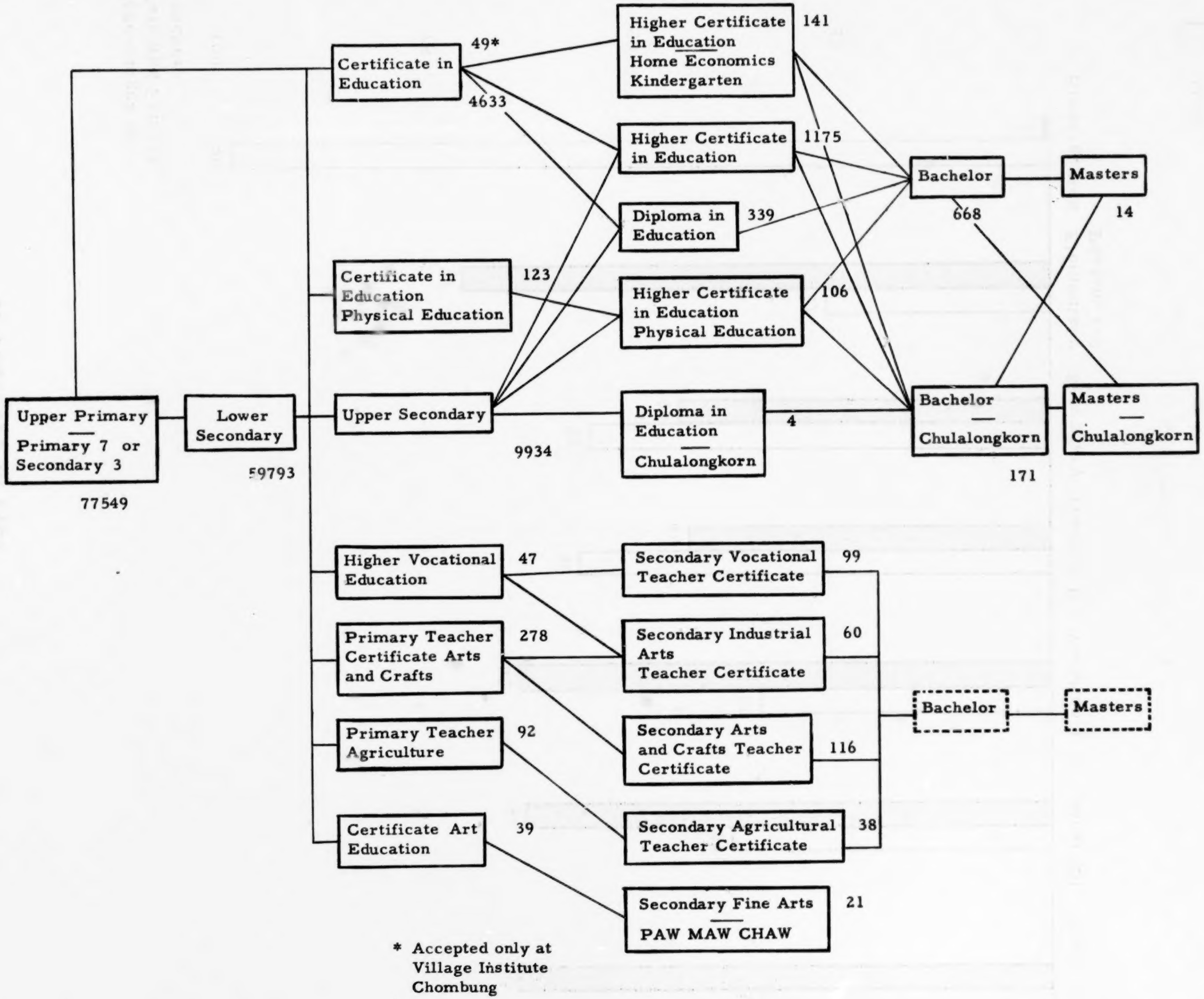
TEACHING FORCE

List of Charts

CHART #		
1	......	The Male-Female Ratio of Teachers in 1961.
2	......	Flow of Graduates Through Various Educational Institutions, 1961.
3	......	Total Number of Teachers Produced by Levels of Training, 1958-1962.
4	......	Qualifications of Teachers in Teacher Training Institutions Under the Department of Teacher Training, 1958-1962.
5	......	Teacher Qualifications in Teacher Training Colleges and Institutes, 1962.
6	......	Qualifications of Teachers in Elementary Schools, 1962.
7	......	Qualifications of Teachers in Secondary Schools, 1962.
8	......	Qualifications of Teachers in Vocational Schools, 1962.
9	......	Number of B.Ed. Graduates Working Under Different Departments of the Ministry of Education.
10	......	Distribution of Bachelor's Degree Graduates by Educational Regions of Thailand (Total - 2282 Graduates).

TEACHING FORCE - CHART 1. The Male - Female Ratio of Teachers in 1961

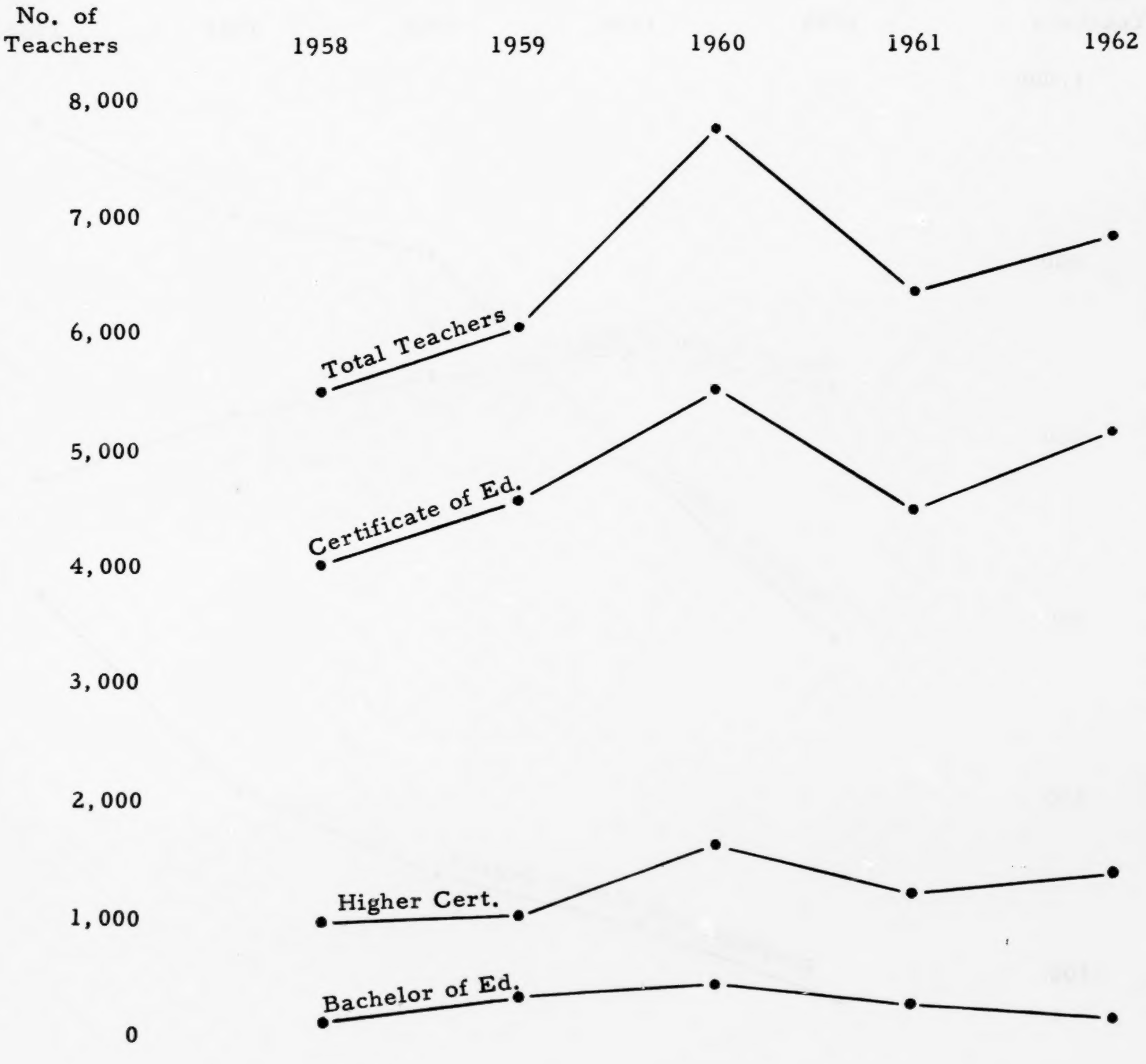



Upper Primary
Primary 7 or Secondary 3
77549
Lower Secondary
59793
Certificate in Education
49*
4633
Certificate in Education Physical Education
123
Upper Secondary
9934
Higher Vocational Education
47
Primary Teacher Certificate Arts and Crafts
278
Primary Teacher Agriculture
92
Certificate Art Education
39
Higher Certificate in Education Home Economics Kindergarten
141
Higher Certificate in Education
1175
Diploma in Education
339
Higher Certificate in Education Physical Education
106
Diploma in Education
Chulalongkorn
4
Secondary Vocational Teacher Certificate
99
Secondary Industrial Arts Teacher Certificate
60
Secondary Arts and Crafts Teacher Certificate
116
Secondary Agricultural Teacher Certificate
38
Secondary Fine Arts
PAW MAW CHAW
21
Bachelor
668
Masters
14
Bachelor
Chulalongkorn
171
Masters
Chulalongkorn
Bachelor
Masters

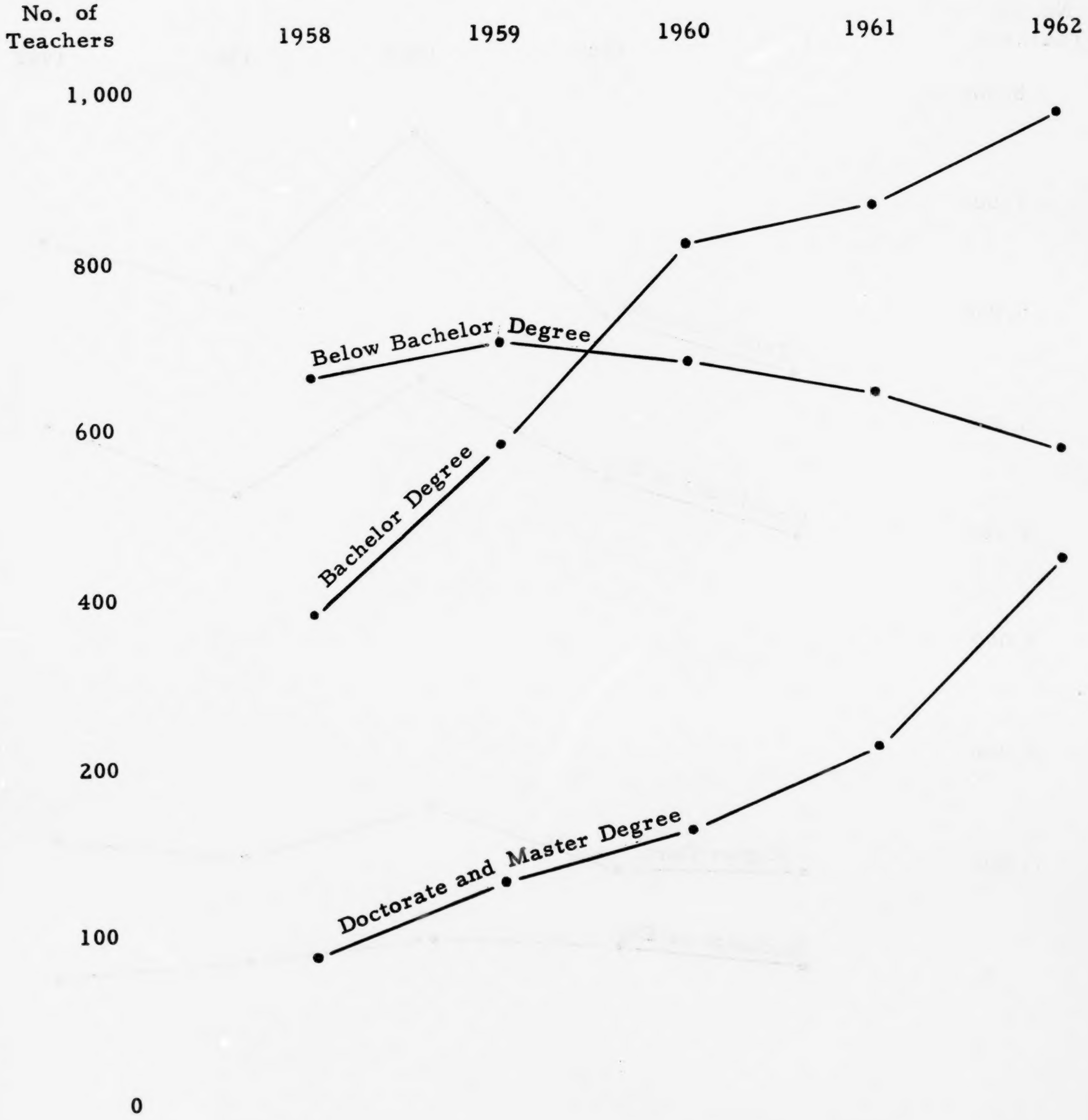
* Accepted only at Village Institute Chombung

TEACHING FORCE - CHART 2. Flow of Graduates through various Educational Institutions, 1961

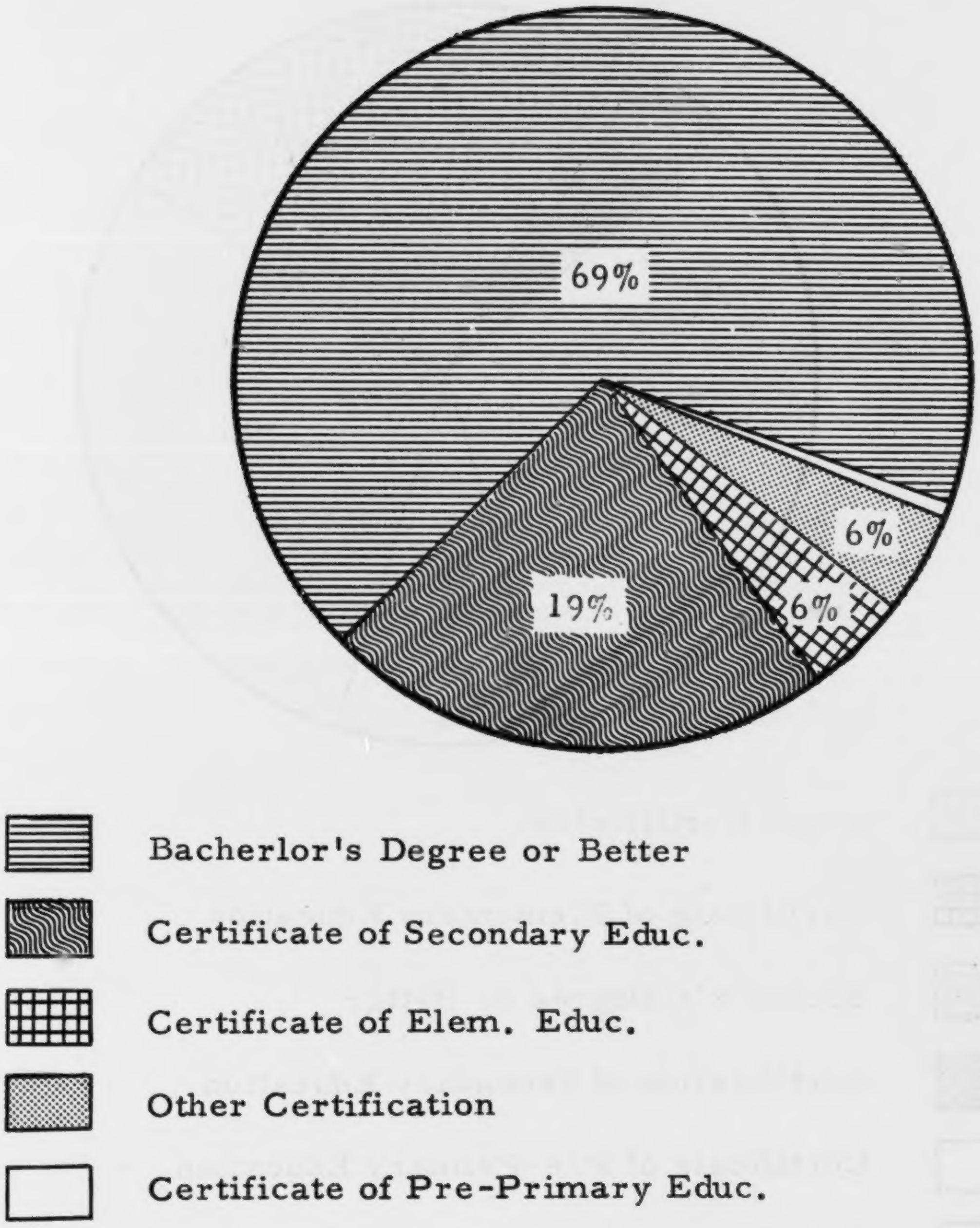
TEACHING FORCE - CHART 3. Total Number of Teachers Produced by Levels of Training, 1958-1962



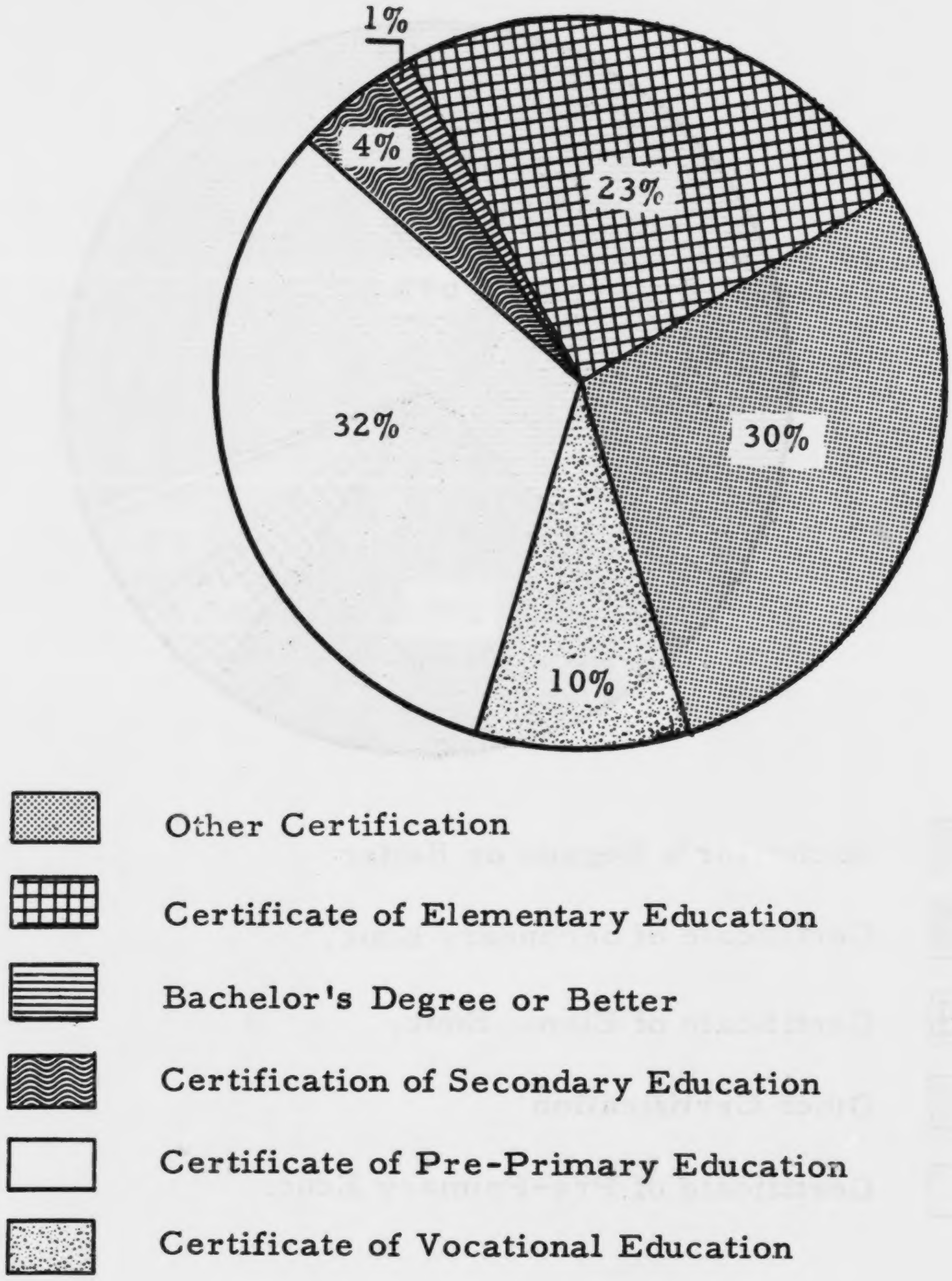
TEACHING FORCE - CHART 4. Qualifications of Teachers in Teacher Training Institutions under the Department of Teacher Training, 1958-1962



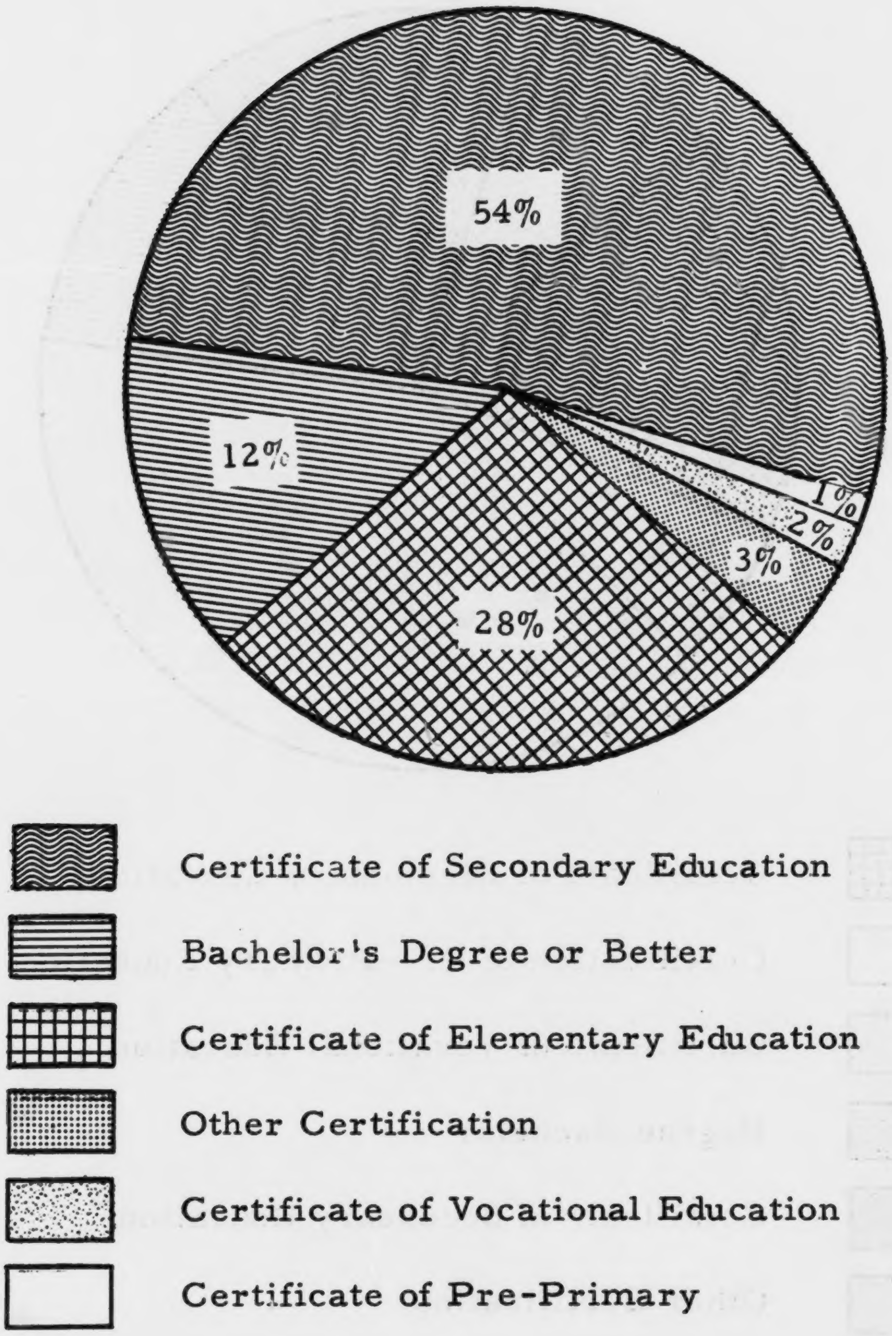
TEACHING FORCE - CHART 5. Teacher Qualifications in Teacher Training Colleges and Institutes, 1962



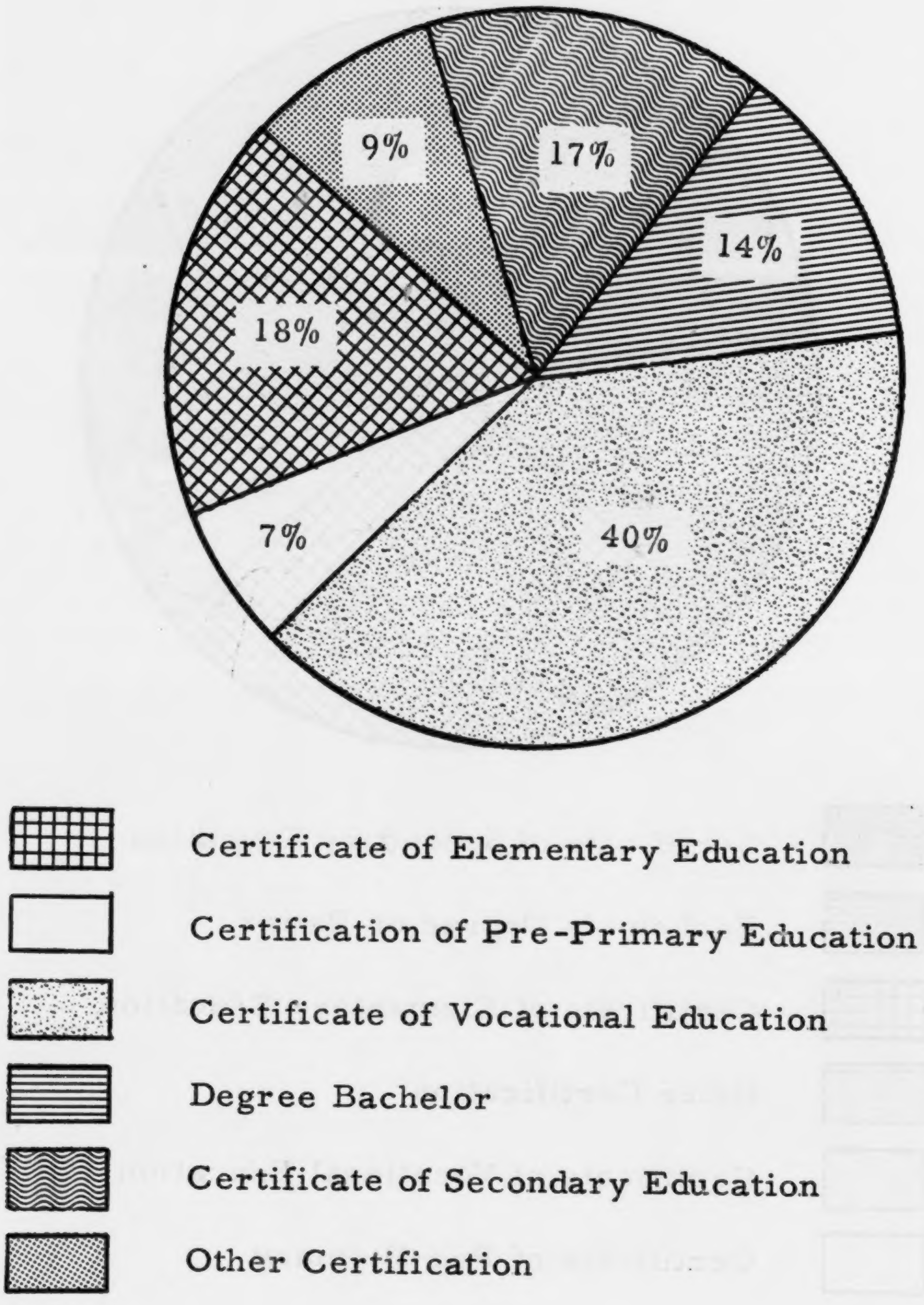
TEACHING FORCE - CHART 6. Qualifications of Teachers in Elementary Schools, 1962



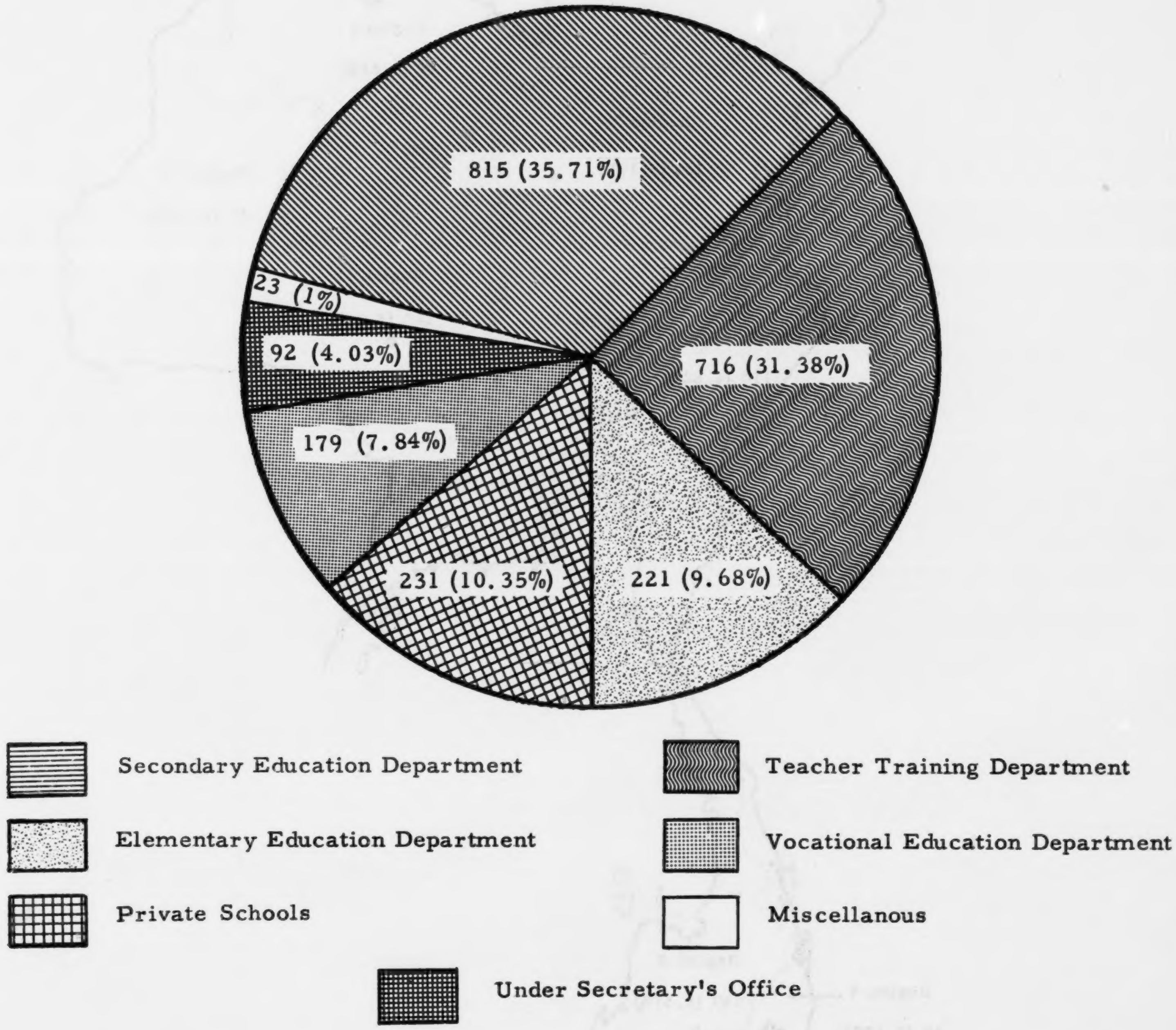
TEACHING FORCE - CHART 7. Qualifications of Teachers in Secondary Schools, 1962



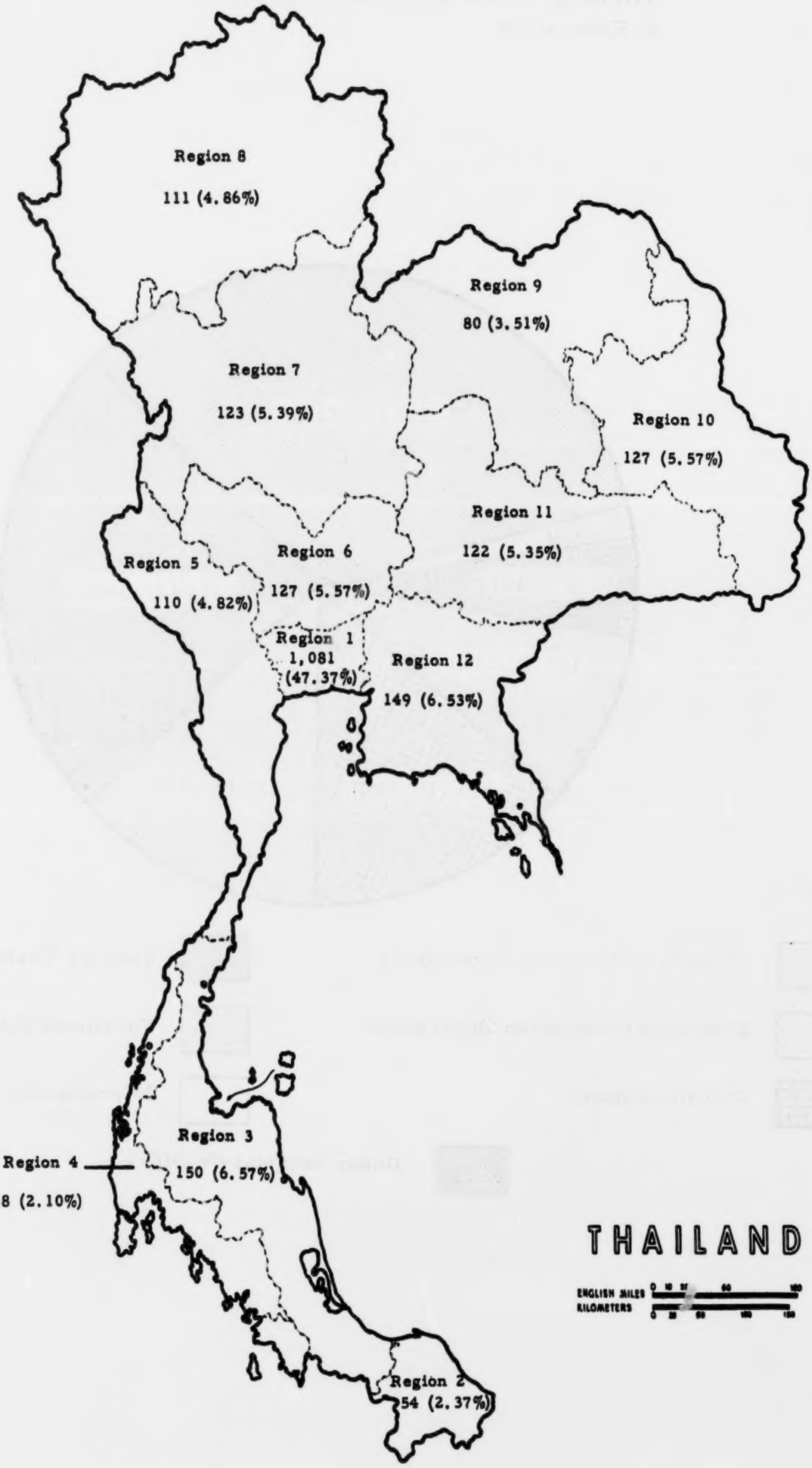
TEACHING FORCE - CHART 8. Qualifications of Teachers in Vocational Schools, 1962



TEACHING FORCE - CHART 9. Number of B. Ed. Graduates Working under different Departments of the Ministry of Education



TEACHING FORCE - CHART 10. Distribution of Bachelor's Degree Graduates by Educational Regions of Thailand (Total - 2282 Graduates)



D

The Improvement of Educational Productivity

Dr. Sai Bhanurat
Mr. Samniang Teeravanit
Mr. Prayuddha Svastisinha
Mrs. Tappanee Nakornthap
Miss Sawet Chungcharoen
Mr. Song Satawan
Mr. Sawat Chongkol
Miss Somnuk Singaperam
Mr. Young Phuakniyom
Dr. Carlyle C. Ring
Dr. Thomas S. Turbyfill

THE IMPROVEMENT OF EDUCATIONAL PRODUCTIVITY

Educational productivity depends, to a large extent, on two factors: (1) the quality of the educational product, and (2) the efficiency with which it is produced, in terms of the time and money expended. The actual identification of those factors which make for improved educational productivity, on either the quality or efficiency side, is not always easy. Nor is it a simple matter to identify ways and means of improving educational production through higher quality and efficiency.

Still there are compelling reasons for examining educational productivity. The investment of scarce educational resources dictates that they yield the largest possible return. If education is to contribute its full share to national development, it must maximise the educational investment. For these reasons, this chapter examines some of the major factors which relate most clearly to considerations of quality and efficiency in the Thai school system.

PART I

STUDENT PRODUCTIVITY

The Effectiveness of the Basic Compulsory Attendance Laws

Fundamental to all educational productivity is the effectiveness of the basic compulsory attendance laws. In Thailand, compulsory attendance is determined by: (1) a 1921-22 Royal Decree which requires four years of compulsory attendance between the ages of 8 and 15, or through grade four, whichever occurs first, and (2) the Compulsory Education Act of 1960 which gives the Minister of Education the authority to extend compulsory education through grade 7 in selected tambols, beginning in 1962. The basic ages remained the same as in the 1921-22 law. Detailed statistics on enrollments can be found in the chapter The Composition and Structure of the Student Population.

At present, elementary education is organized into lower prathom, grade 1 through 4, and upper prathom, grades 5 through 7. In 1960, 3.6 million pupils were enrolled in lower prathom, or 82 per cent of the total enrollment of students in all levels of the Kingdom. Estimates of the percentage of students who either finish grade four or stay in school until 15 years of age range from 84 to 96 per cent, depending on the source of information. However, a better measurement of the effectiveness of the law, the intent of which was to give every child a minimum of a fourth grade education, is the percentage of students who complete grade 4. According to the 1960 census, approximately 77 per cent of the population between the ages of 15-19 had completed grade four, and this figure can be taken as a fair estimate of the effectiveness of the compulsory attendance law during the preceding four years.

Although it is too early to determine the effectiveness of the 1960 Compulsory Education Act, enrollments in grade 5 in 1961,and in grades 5 and 6, in 1962, decreased slightly over the preceding years, indicating that extension of compulsory education through grade 7 probably cannot achieve at the rate presently envisioned by the Government. Although it is believed that this is a temporary trend caused by the transferring of grades 5, 6 and 7 from the secondary to the elementary system, it would be extremely difficult to both reverse this trend and accelerate enrollments sufficiently to insure universal education through grade 7 within the next decade. It would be reasonable to expect that the Compulsory Attendance Act of 1960 can become fully effective, based on enrollment trends by 1980.

Promotion-Failure Ratios of Students in the Thai Education System

The absolute pass rates for grades 1 through 12 for 1961 are given in the table below. (Pass rates for all grades from 1952-1961 can be found in the appendix of Analysis and Interpretation of Educational Statistics and Enrollment Projection by Boonserm Weesakul. They reveal an interesting pattern. Pass rates are extremely low in the first two grades, are considerably higher in the middle grades, and extremely low again in the last two grades of the school system. In 1961, more than 450 thousand pupils failed grade 1 alone. In only two grades, 4 and 7, is the pass rate above 90 per cent. The lowest pass rate was in grade 11 (M.S. 4), 58 per cent, which would not ordinarily be expected since these students must pass through a highly selective process in order to enter from grade 10 (M.S. 3). Even in grade 12 (M.S. 5),which represents an even further selective process, the pass rate is at a low 64 per cent.

ABSOLUTE PASS RATES

1961

GRADE	1 P.1	2 P.2	3 P.3	4 P.4	5 P.5	6 P.6	7 P.7	8 MS.1	9 MS.2	10 MS.3	11 MS.4	12 MS.5
Pass Rate	64.61	78.90	82.06	90.60	87.51	89.49	90.89	83.89	83.37	89.92	58.85	63.40

An effective school system should have pass rates of at least 90 per cent in all grades except possibly the first grade at each level, where it is expected to be somewhat lower. Pass rates at a lower level result in a serious pile-up of students and a consequent heavy investment in "wastage" in the school system. Failures of pupils at the rate prevalent in the Thai school system makes it difficult to both offer a high quality education and to continue to finance the high number of repeaters in each grade. For example, in the primary grades it will take the average student over 5 years to complete grade four. Thus, in effect, Thailand is supporting a 5-year system instead of a 4-year system of primary education.

These comparatively low pass rates have been attributed to a wide variety of reasons ranging from lack of attendance to poor teaching. Most likely the high number of failures in the schools is due to a number of reasons. Some of the better known reasons are: (1) A high percentage of the teachers in the school system are unqualified, (2) There is no provision for substitute teachers when teachers are out of the school or classroom for any reason, (3) A high percentage of the students enrolled do not attend regularly, (4) The number of days of actual classroom instruction for pupils is low, (5) Textbooks, teaching materials, supplies, and equipment are in short supply, and often non-existent for some classes, (6) There has been a reorganization of the curriculum during the past few years without a corresponding change of curricular materials, (7) Many students come from unfavorable economic and social home conditions, and (8) Regulations of the Civil Service system prevents elimination of ineffective teachers, and offers insufficient incentives for others. Some of these reasons which permit statistical analysis are discussed later in this chapter. It is not expected that all of these problems can be solved in a short time, but the improvement of student productivity is dependent on improvement of most of them as quickly as possible.

No statistics are available concerning promotion-failure rates in the universities. However, a study at Chulalongkorn University indicates that approximately 30 per cent of the students who enter the university finish in four years, and that the failure rate in the freshmen class is rather high. Nevertheless, the ratio of graduates of the universities to admissions each year reveals that approximately 45 per cent of all students entering university programs eventually graduate. This compares favorably with universities elsewhere.

The Examination System as a Factor in Encouraging or Discouraging the Improvement of Quality Education

No objective studies of the effect of the current Thai examination system on student performance are available. Principal efforts at the present time seem to approach the problem indirectly through the teachers.

It is recognized by many Thai educators that one of the most important factors in encouraging improvement of teaching is by embodying in the examinations themselves various techniques and content which will provide teachers with incentives to improve their standards, both in teaching and testing.

In an effort to motivate student performance, a number of changes were made during the past two years in the use of examinations as a factor for determining whether a student passes or fails. Whereas formerly student progress was determined entirely by examination, other factors are now used, including daily work throughout the school year. Although it is too early to determine what effect this change will have on student quality, early reports indicate that as a motivating factor for improving student performance it is quite successful.

The Department of Elementary and Adult Education conducted studies in 40 provinces in 1958, 1959, and 1960 for the purpose of comparing the pass rates of students who were given objective type examinations with those who took former subjective type examinations. Although a higher percentage of students passed the objective type examination, differences were not statistically significant.

Despite a lack of information concerning the effects of the examination system in Thailand, it is almost universally recognized that an improvement in the construction and administration of tests is needed. One of the recognized difficulties is the lack of a sufficient number of personnel who have received training in this area. An attempt is being made at the present time to provide standardized tests in many areas, and to increase the variety of tests given, including tests to measure student ability and aptitude. A detailed and thorough study needs to be made of the system of examinations, and the proper use of examination for improving student quality.

The Workload of Students

Grades 1-4 are in session 25 to 30 hours per week, and all grades 5-7 are all in session 30 hours per week. Secondary schools require students to attend a minimum of 30 hours per week.

All students in both elementary and secondary schools have full work loads for each hour and consequently no free time. Thus, the workload of students corresponds with the time school is in session.

The Expenditure of Student Time as Related to the Achievement of Educational Goals

Announced educational goals in Thailand are so broad it is difficult to correlate the expenditure of student time with the achievement of goal objectives. In grades 1-4, half of the students' time is spent in Thai language and social studies. In grades 5-7, slightly over one-half of the students' time is spent on three subjects: Thai language, mathematics, and social studies. In lower secondary school, grades 8-10 (M.S.1-3), time is about evenly divided between Thai language, social studies, mathematics, English, science and electives. In upper secondary school, grades 11 and 12 (M.S.4-5), the emphasis for student time is on the liberal arts in the pre-university "art" schools, and on science in the pre-university "science" schools.

The number of days spent in class per year varies. There are many "breaks" during the school year for holidays, school fairs, examinations, social days, etc. Estimates of the number of days students actually spend in the classroom receiving instruction vary from 95 to 175. For effective achievement of educational goals, students should probably receive at least 170 days of classroom instruction during the year. From scattered evidence, it would seem that most students do not meet this target.

The Screening of Students for Admission

There are no screening instruments or guidance services available for mass evaluation of student capabilities in Thailand. Admissions to universities are based upon a national entrance examination for students who have successfully completed grade 12 (Matayom 5) of pre-university. Admissions at lower levels are based upon local examinations. No evidence is available to indicate the extent to which the screening of students by examinations successfully identifies the most capable ones.

The number of students who pass the examination at each level is largely determined by the available "seats" at the next higher level, the students with the highest scores being admitted on a rank-order basis.

A study by Pinyo Satarn at Chulalongkorn University indicates that the scores on the university entrance examination correlates better with subsequent success of students than scores on the pre-university examination given at the end of grade 12. However, neither had a significant correlation with student success in college, suggesting that factors other than examination scores should be used for screening students for college admission. With such a relatively small number of admissions to universities each year, Thailand should use every device possible to insure that the most capable students are selected for this and other levels of education.

The Density of the Curriculum in Terms of Demands Placed Upon Students

Due to the short time available for this study of this area, no conclusions could be drawn. There have been no previous studies in this area, and no statistical information is available.

The Relevance of the Curriculum to the Attainment of Educational Goals

Although there has been a complete reorganization of the curriculum during the past several years in elementary schools, and a redirection of the curriculum in secondary schools, little evaluation of the curriculum in terms of educational goals has been attempted. The reorganization of the curriculum and curriculum content was not extensively accompanied by a corresponding change in curriculum materials and teaching methods. However, teacher training schools are using the new curricular content in the training of new teachers, and most syllabi in schools at all levels have taken into consideration the important aspects of curricular changes. There is a need for an intensive training program to familiarize teachers in service with newer methods and techniques of teaching required to effectively relate the curriculum to the attainment of the educational goals of Thailand.

PART II

THE IMPROVEMENT OF EDUCATIONAL PRODUCTIVITY

Teacher Productivity

This section is closely related to the working paper on "The Composition and Structure of the Teaching Force" and should be considered along with it. In many instances duplication of statistics is unavoidable. Statistical data concerning universities in all of the areas, except for part-time teachers, are so meager that they were not considered.

Teacher Holding Power and Turnover at all Levels of Instruction

Thai observations concerning teachers' length of service in the elementary system as based on the following assumptions:

1. Every teacher under Civil Service Board regulation can work until attaining the age of 60.

2. Teachers who gain the lower Certificate of Education usually start teaching at the age of 20, and thus can achieve 40 years of service.

3. Teachers who hold the higher Certificate of Education begin work at the age of 22, and therefore can teach approximately 38 years.

4. Teachers who possess degrees commence their teaching careers when about 24-25 years of age, and can work for approximately 36 years.

Thus, the average potential holding power for elementary teachers is from 37-40 years. No data were available regarding actual holding power for elementary teachers.

Although no studies have been made to determine the average length of time teachers remain in service, it is common knowledge that few teachers quit the profession for any reason other than death, physical incapability, or family demands. This is also supported by non-empirical evidence. The number of new teachers employed by the Thai school system each year quite closely approximates the number of new positions created to accommodate increased enrollments.

By the same token, teacher turnover seems to be relatively low. Informal inquiry confirms that most teachers who start to teach expect to make it a life-long career. Since civil service regulations protect teacher tenure and Thailand has no significant migrating population, holding power for individual schools is relatively high, and that for the system as a whole even higher.

Tables showing the age group and length of service for teachers in government secondary schools are reproduced below:

Age Group of Secondary School Teachers Employed in Government Schools During Academic Year 1963

Age	Number of Teachers		
	Central	Regional	Total
16 - 20	5	12	17
21 - 25	475	1,566	2,041
26 - 30	952	1,964	2,916
31 - 35	455	921	1,376
36 - 40	278	592	870
41 - 45	135	312	447
46 - 50	151	262	413
51 - 55	78	142	220
56 - 60	62	70	122
Over 60	1	2	3
Mean	32.4	31.1	31.5

Length of Service of Secondary School Teachers Employed in Government Schools During Academic Year 1963

Years of Service	Number of Teachers		
	Central	Regional	Total
Less than 1	50	280	330
1 - 5	1,125	2,632	3,757
6 - 10	694	1,225	1,919
11 - 15	296	666	962
16 - 20	189	525	714
21 - 25	100	299	399
26 - 30	120	184	304
31 - 35	43	87	130
36 - 40	45	48	93
41 - 45	12	5	17
Mean	9.5	8.9	9.1

These tables reveal that the mean age for secondary school teachers is 31.5 years, and that the mean length of service is 9.1 years. When taking into consideration the extent to which the secondary schools have expanded during the past ten years and the fact that new positions are filled mostly by young teachers who have just completed pre-service training, these means indicate that both the holding power and turnover of teachers in government secondary schools are at a satisfactory level.

No statistics are available in these areas for private schools.

Teacher-Pupil Ratios at All Levels of Instruction

The table reproduced below shows the teacher-pupil ratios by type of institutions from 1952 to 1962:

Teacher-Pupil Ratios
Based on Gross Pupil and Teacher Figures, By Type of Institutions*

1954-1962

Institution Year	Kindergarten	Primary Municipal & Local	Primary Ext.	Sec.	Teacher Trng.	Voc.	Private	Other
1954	18	36	27	26	11	19	27	20
1955	20	35	28	28	11	19	28	25
1956	22	36	31	29	16	19	28	21
1957	23	36	43	26	16	20	27	22
1958	23	37	29	29	15	18	28	13
1959	20	36	24	25	13	15	26	20
1960	21	36	21	25	12	14	25	16
1961	21	40	30	21	11	11	24	26
1962	22	39	28	22	13	10	23	15

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* **The figures represent gross enrollment in ratio to gross number of teachers. They can be somewhat misleading, since elementary teachers are in the classroom nearly 100 per cent of the week and secondary, vocational, and others are in the classroom only a portion of full time.**

A study of the table reveals that primary teachers had the highest teacher-pupil ratios, ranging from 35-40 pupils per teacher; vocational teachers had the lowest teacher-pupil ratios, ranging from 10-20 pupils per teacher; and that secondary teacher-pupil ratios fell between those of the other two levels, ranging from 21 to 29 pupils per teacher.

Average ratios in teacher training schools were lowest among the four Ministry departments, ranging from 11 to 16 pupils per teacher, and private schools had the most stable ratios, ranging from 23 to 28 pupils per teacher.

In general, none of the ratios seem excessive. However, most of them were obtained by dividing the gross number of teachers into the gross yearly enrollment of students, and do not reflect a true teaching load since teachers assigned to positions other than classroom instruction and teachers not actually present during the school year were not deducted from gross teacher numbers. Absolute teacher-pupil ratios would consequently be somewhat higher.

A better indication of real teacher-pupil classroom loads would also be obtained by basing teacher-pupil ratios on average daily attendance. Total enrollments for the school year are always consistently higher than net enrollments at any one time since many students drop out during the year for various reasons. Furthermore, net enrollments are not necessarily a true measure of teacher load as students enrolled may attend infrequently or not at all. In order to obtain a consistent measure of teacher loads in the future, statistical reports should include teacher-pupil ratios based on the average number of pupils attending school on a daily basis.

Ratio of Qualified and Unqualified Teachers at Different Levels

The Ministry of Education has been concerned with this problem and the table below indicates trends from 1956 to 1962:

Improvement in Teacher Quality as Expressed by Qualification Changes 1956 - 1962.

Year	Total No. Teachers	Qualifications Expressed in Percent of Total					
		Degree	Diploma	Sec. Teach. Cert.	Elemen. Teach. Cert.	LowerThan Elemen. Teach. Cert.	No. Teaching Qualifications
1956	102,617 100%	798 0.78%	370 0.36%	2,556 2.49%	7,452 7.26%	25,888 25.23%	65,548 63.88%
1957	111,263 100%	978 0.89%	339 0.30%	3,432 3.08%	10,197 9.16%	35,762 32.14%	60,555 54.43%
1958	119,405 100%	1,471 1.23%	323 0.27%	4,653 3.90%	15,469 12.96%	32,971 27.61%	64,518 54.03%
1959	131,006 100%	2,920 2.23%	344 0.26%	6,607 5.04%	19,499 14.89%	34,342 26.21%	67,294 51.37%
1960	136,576 100%	3,600 2.64%	395 0.29%	7,899 5.78%	21,504 15.74%	35,327 25.87%	67,851 49.68%
1961	137,748 100%	4,306 3.12%	509 0.40%	10,849 7.87%	30,114 21.86%	42,225 30.65%	49,745 36.11%
1962	140,298 100%	4,243 3.02%	11,241[1] 7.90%[1]		31,788 22.66%	35,352 25.20%	57,174 40.75%

[1] Diploma and Secondary Teacher Certificate.

The study of the table reveals a general trend of improvement in the quality of teachers. However, in 1962, out of 140,298 teachers, only 4,243 had a degree and only 11,241 had diplomas or secondary certificates. These two groups comprise 10.92 per cent of the total number of teachers, whereas 40.75 per cent had no professional qualifications for teaching, and a total of 65.95 per cent had qualifications which were lower than an elementary certificate.

Although there has been a steady increase in the number of teachers with degrees, from 798 to 4,240 or from 0.78 per cent to 3.02 per cent during the period, it is questionable whether this is fast enough to really affect the overall effectiveness of teaching in Thai schools. It is far below the Ministry's objective for degree teachers.

Teachers who have a diploma have completed a two-year or four-year Teacher Training course, but have not earned a degree. Between 1956 and 1961 this group did not change significantly and at no time comprised as much as 1 per cent of the total teaching force. Since they represent the second level in teacher qualification, this raises a question as to what happened to the graduates from teacher training schools and colleges.

The holders of secondary and elementary teachers certificates usually earn their credentials through private study and teaching examinations, although some courses may be taken at the teacher training school. There was a healthy increase in the number of teachers with secondary certificates, from 2,556 in 1956 to 10,849 in 1962, or from 2.49 per cent to 7.87 per cent of the total teaching force. Holders of elementary certificates increased from 7,452 to 31,788, or from 7.26 per cent to 22.66 per cent during the same time. These two groups collectively represented 43,029 teachers, or about 30 per cent of total teachers in 1962.

Teachers holding certificates lower than Elementary Teachers Certificates have had less than two years professional preparation after completion of grade 4 or 7. There is no definite trend in their numbers, ranging from 25,888 in 1954 to 35,352 in 1962. They comprised approximately 25 per cent of the total teachers in each year. If the quality of teachers is to improve significantly, there must be a decided increase both in numbers and in percentages of teachers in this group.

Teachers holding no educational qualificatinns have had no professional educational training, but have completed grade 4 or higher. There is no decided trend in this group. This group varies from 49,745 to 67,851 or from 26.1 per cent to 63.88 per cent. In 1962, more than 57,000, or 46.75 per cent of the total teachers in the school system, were in the group.

Although the quality of preparation of teachers as measured by these statistics seems to be improving, the average annual rate of improvement is so small that a comparatively well qualified staff of teachers can not be achieved for many decades. Both the number of qualified teachers coming into the system each year and the upgrading of teachers in service must be accelerated greatly if an effective instructional program is to be achieved within target objectives for economic development.

Ratios of Part-Time to Full-Time Teachers

The ratio of part-time to full-time teachers is of importance if it is assumed that a full-time faculty is likely to be a faculty of higher quality. Since practically all teachers at the elementary and secondary levels teach full time, no investigation was needed at these levels. At the university level, as shown in the table which follows, there is considerable use of part-time faculties.

Ratio of Part-time to Full-time Faculty in Thai Universities

YEAR	Total	Full-Time	Part-time	% Full-time
Chulalongkorn University				
1954	336	134	202	40
1955	295	138	157	47
1956	352	179	173	51
1957	528	326	202	61
1958	562	322	240	59
1959	519	330	189	63
1960	609	462	147	75
Thammasat University				
1954	223	11	212	04
1955	229	6	223	026
1956	274	12	262	04
1957	284	12	272	04
1958	316	21	295	06
1959	343	33	310	09
1960	327	46	281	14
Univ.of Medical Science				
1954	485	313	172	65
1955	482	334	148	69
1956	578	423	155	73
1957	546	414	132	75
1958	632	478	154	73
1959	640	496	144	77
1960	814	660	154	81
Univ. of Agriculture				
1954	188	119	69	60
1955	197	136	61	67
1956	236	113	123	49
1957	277	142	135	51
1958	205	133	72	64
1959	265	156	109	59
1960	330	173	157	52
Univ.of Fine Arts				
1954	13	2	11	15
1955	42	6	36	14
1956	53	3	50	05
1957	56	8	48	14
1958	74	14	60	19
1959	81	19	62	23
1960	109	30	79	27

At Thammasart University, only 4 to 14 per cent of the faculties taught full-time, and the University of Fine Arts also had a small percentage of full-time faculty. The University of Medical Sciences had the largest percentage of full-time faculty - ranging from 65 to 81 per cent.

The percentage of full-time staff at Chulalongkorn University ranges from 40 to 75 per cent. No computations are available equating part-time faculty teaching hours with a full teaching load. At all universities the number of part-time teachers is excessively high.

Participation Trends In-Service Programs

Since previous figures indicate over 92,000 teachers needing upgrading, the in-service program is of great importance. The table below presents a summary of in-service training for elementary teachers. No similar statistics are available for secondary teachers.

YEAR	ELEMENTARY IN-SERVICE TRAINING			
	Programs arranged by the Supervisory Unit		Programs arranged by the other units	
	Number of Programs	Number of Participants	Number of Programs	Number of Participants
1956	3	174	Not available.	
1957	3	333	"	
1958	5	322	164	18,148
1959	2	111	206	20,461
1960	3	171	144	11,633
1961	2	156	191	14,747
1962	2	149	186	18,503
1963	6	309		

The trainees are classroom teachers, principals, and supervisors. The length of the program varies according to the type of trainee. The subjects also are planned to suit the position of trainees. There are no observable trends in the number of personnel receiving training annually. Most of the training is not for credit, but to keep school personnel up to date within their areas of specialization.

Equally important as the number of teachers trained is the quality of training, for which no objective information is available. A thorough study should be made of both quality and quantity for the entire school system.

Work Load of Teachers in Terms of Hours per Day, Days per Year, and Level.

This information cannot be accurately determined. However, all schools follow the same 3-term pattern. Schools open around the middle of May and finish the first term about the third week in August; begin the second term the first week in September and continue until late December; and open again early in January and continue to the middle of March. There are vacation periods as follows:

Between 1st and 2nd term - 1 week
Between 2nd and 3rd term - 1 week
Between 3rd and 1st term - 8 weeks
Total ... 10 weeks

In addition to these regular breaks, there are days with no classroom instruction, varying from school to school. A student may complete a year's work in elementary school by attending only 60 per cent of the time or a minimum of 137 days. Teachers are allowed up to 3½ months (70 days) of absence during a year, and in most cases no substitute teacher is required or provided. In a special study made of the Boys' High School in Pitsanuloke, the following information was obtained concerning possible days of classroom instruction:

Total calendar school days - 204 days

Holidays - 13 days
Examinations - 15 "
School Fair - 5 "
School closing formalities - 6 "
Total - 39 days

Maximum possible days for instruction - 165 days

The average teacher in the lower elementary school teaches 25 hours a week and the upper elementary teacher 30 hours a week. Secondary teachers usually teach 18 hours out of a 30-hour week. With 165 possible days in instruction, a teacher using his total leave allowance of 3½ months (about 70 days) may meet his teaching obligations by teaching a minimum of 95 days. No substitute teacher plan has been developed to provide for someone to meet classes during his absence. Theoretically, another teacher or the principal is expected to absorb the students of the absent teacher. In practice, however, the child may have only 95 days of teacher instruction a year, or less, if he happens to be absent on the days the teacher is in the classroom.

In addition to the non-instructional days listed above, there may be many days when school is interrupted for other special activities. Thus it is possible for a student to receive less than 90 days of classroom instruction during the year. Until extensive studies have been made in this area, it is impossible to ascertain the actual total days of instruction in a school year.

Teaching Methods and Practices Related to Achieving Educational Goals.

Sufficient time was not available to conduct studies in this area. A statement on this topic was drafted by members of the elementary department and is reproduced below.

"The methods of teaching and the educational goals in primary schools are closely related. Primary school curricula are determined by educational aims. With these goals as the target, the curricula are organized to facilitate methods of teaching. The supervisory unit of the Elementary Department, the Bangkok-Dhonburi Education Project, and the provincial and the regional supervisory units are responsible for seeing that schools strive to reach these objectives. There has been research, jointly engaged in by this Department and the International Institute for child study, on educational methods and practices. The results will be intensively and critically studied. The study is expected to be published in 1964 or 1965.

Generally speaking, it can be said that from the last decade up to the present time teaching methods and practices have contributed to achievement of educational goals."

PART III

EDUCATIONAL FACILITIES

A study of educational facilities is necessary to complete an analysis of educational quality. No program can achieve good quality without adequate facilities.

Classroom-Pupil Ratios at Different Levels of Instruction

Data on classroom-pupil ratios is shown in Table 14 in the chapter, The Composition and Structure of the Student Population. A study of this Table indicates the following conclusions:

1. The lowest pupil-classroom ratio among all levels for government schools is 21 and the highest is 41.

2. The entering grade at each government school level has the highest ratio within the level. For example, Prathom 1 has a range of 34-37 and each successive grade is lower with Prathom 4 having only a range of 21-25.

3. Private schools in all cases except for Prathoms 3 and 4 and MS. 4 and 5, have a considerably lower ratio than the government schools. In the secondary school this difference is as great as 10 pupils less than the corresponding figure for government schools.

4. There is no clear-cut trend for these ratios except for the upper elementary, where there is a tendency for a decrease in ratio.

The Table indicates that at the present time there is no serious lack of classrooms. However, many children desiring to attend government schools are forced to attend private schools because of the lack of classrooms in government schools. Once the compulsory attendance law becomes effective on a national scale for Prathoms 5 - 7, there will be a severe shortage of classrooms in the upper elementary. However, changes in Ministry policies can affect these ratios almost overnight.

Availability of Instructional Materials

The Ministry budget provides materials only for teachers. In general, the expectation of the Ministry is that parents will provide all textbooks and instructional materials. As a result the availability of instructional materials varies from school to school and even within schools from one pupil to another, depending upon the economic level of the parents. Consequently, there are some schools where one textbook per class may be all that can reasonably be expected, and others where every pupil has all the textbooks and materials needed. A few schools have adopted a rental plan for texts and have extra copies of texts to supply free to indigent students. Nevertheless, few schools and few pupils have even a minimum acceptable supply of textbooks, materials, or supplies.

Trends in the Availability of Library Resources

Little statistical information is available in this area. The Ministry of Education has set up a program aimed at improving library facilities at all levels of education, but most school libraries are generally small with a paucity of volumes on the shelves.

A curriculum center for the Department of Elementary and Adult Education was established to help teachers in all areas of school library development and to arrange various types of programs for in-service training for teacher-librarians in the primary school. The Division of Adult Education of the Department of Elementary and Adult Education is responsible for public libraries in every province and district. The Library Association of Thailand arranges short courses for teacher-librarians during vacation periods and helps schools to acquire books as well as improve their library services. The other Ministry departments usually have libraries for convenience in research. To a certain extent, teacher-librarians may get assistance from these libraries. Library services are also provided by other organizations, such as U.S.I.S., the British Council, but only in a few areas.

It should be pointed out that student schedules at the present time do not permit full utilization of library facilities, even in the few schools where comparatively good libraries exist.

A UNESCO summary of school libraries for 1962 with a statement pertaining thereto, appears below.

School Libraries and School Librarians in Thailand, 1962

Department and Type of School	Number of Schools	Schools with librarians	Schools without librarians	Full-time Librarians		Part-time Librarians	
				Prof'l	Sub-prof'l	Prof'l	Sub-prof'l
Secondary Education							
Government Schools	406	62	344	6	6	1	49
Private Schools	2,791	36	2,755				36
Totals ...	3,197	98	3,099	6	6	1	85
Elementary and Adult Ed							
Kindergarten	58						
Primary Schools	22,855						
Municipal Primary Sch.	407						
Higher Primary Schools	1,362						
Pilot Project Schools	7						
Totals ...	24,689	5	24,684	1			4
Vocational Education							
Short Course Schools	8						
Primary Voc. Schools	65						
Lower Vocat. Schools	20						
Upper Vocat. Schools	146						
HigherVocat. Schools	9						
Totals ...	248	10	238		1		9
Teacher Education							
College Level	13						
Training school level	13						
Totals ...	26	26		9			17
GRAND TOTALS ...	28,160	139	28,021	16	7	1	115

This table reflects the enormity of the school library problem. It reveals that only 139 schools have libraries which can be defined as such according to the definition that is given here. Most of the 115 librarians who are listed, work in the secondary schools; of these, 86 serve only part of their time in the library and the remainder in the classroom. The next largest number of librarians, 26, represents those in the Teacher Education colleges and training schools. The figures indicate understandable emphasis on the libraries of the teacher-training institutions and the secondary schools.

New School Construction

New school construction in Thailand is usually a joint enterprise, generally initiated by local school authorities, and partially financed locally by voluntary contributions. However, the Ministry of Education usually provides the main share of the expense for construction.

Tables summarizing construction at the elementary and secondary level appear below:

Elementary School Construction

YEAR	Lower Primary	Higher Primary
1953	-	38
1954	329	74
1955	255	31
1956	465	219
1957	190	36
1958	1,359	110
1959	696	101
1960	487	146
1961	717	435
1962	505	118
1963	365	-

Secondary School Construction

Years	No. of Schools	Expenditure	Type of Expenditure
1954	13	30,861,275	Budget
1955	11	197,671,596	"
1956	17	19,031,092	"
1957	23	15,240,770	"
1958	23	40,621,121	"
1959	15	33,455,989	"
1960	20	11,429,810	"
1961	12	23,385,000	"
1962	11	34,869,400	"
1963	19	40,044,000	"

In Bangkok and Dhonburi, new secondary schools are built to meet the needs of the increasing number of children. In the provinces, one boys and one girls secondary school are built in each changwad. Co-educational secondary schools are generally built in every amphur where the population comes up to 20,000. Currently, there are about 200 amphurs with no secondary schools. Most of the amphur schools were initially built by money donated by the people, and later through the government budget.

The ratio of the money spent in the construction of the amphur schools is presumed to be one part from community donations to four parts from the government budget. However, no extensive statistical data is available in this area for schools at any level.

A study of the two tables above seems to show no real policy or trend in school construction.

The heaviest construction for primary schools took place in 1958 when 1,359 new schools were constructed. The greatest construction of higher primary schools took place in 1961, which is coincident with the promulgation of the new compulsory education laws for upper primary, when 435 new schools were constructed. In secondary school construction, the largest number were constructed in 1957 and 1958, 23 schools each year. The peak expenditures took place in 1958 and 1963 when over 40 million bahts were expended. There seems to be no trend or fundamental policy with regard to school construction.

E

The Role
of
Vocational Education

Mr. Rabil Sutasuwan
Mr. Vivek Pangphuthipong
Dr. Virat Kamutmas
Mr. David Graham

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THE ROLE OF VOCATIONAL EDUCATION

PART I

DEPARTMENT OF VOCATIONAL EDUCATION

The Department of Vocational Education is responsible for developing and promoting vocational education, preparing young people for good citizenship, and training skilled workers for a changing agricultural and industrial economy. The Department cooperates with other government agencies, professional groups, and individuals in establishing and extending vocational education activities to the young and adult population. In addition, it is charged with designing, estimating and supervising the construction activities of the Ministry of Education. Organization and other descriptional charts of the education system are included at the end of this working paper.

Office of the Secretary

The Office handles correspondence of the Director-General, is the central routing point for all communications and inquiries pertaining to the Department, coordinates activities within the Department and with other Departments, handles the finance, school accounts, personnel records, and statistics, provides examinations and certifies vocational teachers and students at leaving-school levels, inspects all schools under its jurisdiction, with emphasis on the improvement of academic programs, school activities, administration and finance.

The Office is divided into six sections: Correspondence, Finance, Statistics and Records, Registration and Certification, Examination, and School Inspection.

Trade School Division

The Division is responsible for the expansion of new trade school programs, the improvement and supervision of all such schools relative to curriculum, academic standards, school administration, financial assistance and training facilities. There are 77 schools for boys and 74 schools for girls located throughout the country, operating at the U.S. 8-13 grade level. The Division supplies and produces instructional materials and training equipment for all schools, and supervises the school contracts.

The Division is divided into three sections: Trade School for Boys, Trade School for Girls, and School Equipment Section.

Commercial and Industrial School Division

The Division is responsible for the formation of vocational schools and the improvement and supervision of 14 vocational schools, 12 located in Bangkok. Also in Bangkok are three commercial schools, two mechanical schools, one technical school, two building construction schools, one tailoring school, one arts and crafts school, one foreign language school, and one tele-communication school. One mechanical trade school is located in Lopburi, another in Nondburi. These schools operate at the U.S. 11-13 grade level. The Division is also charged with providing in-service training for vocational teachers.

The Division is divided into two sections: (1) School Section, (2) In-Service Training Section.

Agricultural School Division

The Division supervises 21 agricultural schools located throughout the country, recommends the establishment of new schools and the means of improving existing schools, procures and issues supplies, teaching materials, agricultural tools and farm equipment. One school offers Teacher Training at the U.S. 14-15 grade level; one school operates a technical agriculture program at the U.S. 14-15 grade level, as well as vocational agriculture at the U.S. 11-13 grade level. There are 4 "special" schools, two for young farmers, two offering short courses (5 months). Of the remaining schools many are (level-wise) in a transitional state of development (see chart below).

Present Instructional Level (1963) Agricultural Schools

Location of School	U.S. Grade Level								Remarks
	8	9	10	11	12	13	14	15	
Bangphra				X	X		X	X	Teacher Training (14-15 years)
Ayuthaya			X	X	X	X			
Mae Joh				X	X	X	X		Technical level just started (1963)
Surin				X	X				
Tung Song			X	X	X	X			
Burirum	X	X	X	X					
Cholburi	X	X	X						
Chaiyapoom	X	X	X						
Kalasin	X	X	X	X					
Korat	X	X	X	X					
Nakorn Pathom	X	X	X	X	(X)				Now starting long-range primary in-service teacher training
Nan	X	X	X	X					
Pathum Tani	X	X	X						
Pitsanuloke	X	X	X						
Songkhla	X	X	X						
Srisaket	X	X	X						
Trang	X	X	X						
Lopburi	Young Farmer School								
Prachinburi	Young Farmer School								
Udorn	Short Course School								
Chumporn	Short Course School								

The Division is divided into two sections: School, and In-Service Training.

Technical Institute Division

The Division is responsible for the formation of new technical institutes and for improving and supervising the activities of existing institutes. The Technical Institutes provide advanced courses in auto mechanics, electrical technology, radio technology, metal work, construction, carpentry, printing photography, accountancy, home economics, tailoring, land survey, industrial arts and technology. Vocational, industrial arts and home economics teacher training courses are also offered. Within the Division there are five technical institutes located in Bangkok, Dhonburi, Nakornrajasima (Korat), Songkhla, Chiengmai, a vocational teachers college in Bangkok, and a building construction institute in Dhonburi. The Division is mainly concerned with improving liaison between the Department and institutes, providing financial assistance, teaching aids, training materials, and general administrative assistance. The three regional institutes are in transition from U.S. 11-13 to U.S. 14-15 grade level in all instructional programs now paralleled in the trade schools.

Vocational Promotion Division

The Division is responsible for vocational promotion and for guidance programs. The Division provides psychological testing and counseling services to students in selecting courses of study offered by vocational schools. It is also charged with publicizing vocational education and training among the school population and the general public. The Division also acts as a placement agency between Government agencies, business firms, other organizations and individuals, and students and graduates of vocational schools. In addition, the Division is responsible for the administration and supervision of 4 short-course schools and 2 mobile vocational training units. Additional mobile units are planned.

The Division is divided into two sections: Counseling, Testing and Surveying, and Placement and Follow-up.

Design and Construction Division

The Division is responsible for designing, estimating building costs, and supervising the construction activities of the entire Ministry of Education. It also provides practical training on construction to vocational students, and studies and advises schools on construction materials and methods.

The Division is divided into three sections: Administrative, Planning, and Construction and Supervision.

Supervisory Unit

The Supervisory Unit is responsible directly to the Director-General, and serves as a technical staff to the Department. Its main function is to give technical advice to schools, particularly in methods of teaching. Thus, it surveys school needs and problems, assists schools in strengthening their academic standards, school activities, curriculum and extra-curricular activities, recommends ways to improve teaching methods, school facilities and equipment, plans in-service training programs, demonstrates new techniques of teaching, and publishes books, pamphlets and educational materials and disseminates them to schools and libraries.

COMMUNICATION BETWEEN THE DEPARTMENT AND INDIVIDUAL SCHOOLS

a. Central area. The Bangkok-Dhonburi metropolitan area has a special relationship to the national government, different from that which prevails in the balance of the Kingdom. This area operates on a western-style city management plan most of whose characteristics are not directly relevant to the subject of this paper. To be as brief as possible, nationally-administered schools situated in this area have direct access to their appropriate Departments in the Ministry of Education, by telephone and in person, and much routine business can be accomplished with a minimum of time and formality.

b. Provinces. Each province, or changwad, of the Kingdom has a governor, who is an official of the Ministry of Interior. The governor is assisted by a staff containing one official attached to, and responsible to, each of certain ministries in the national government. The governor is totally accountable for the management of his changwad, and his staff functions in the changwad much as the national cabinet of ministers functions for the nation as a whole. The governor through this staff administers public affairs in conformity with national policy as proclaimed from the various offices of the national government. All communications between an individual changwad school and the Ministry of Education pass through the changwad education officer. If the communication has policy aspects, it will probably also cross the desk of the governor.

The communication channels may be better understood by chart 8 (which does not attempt, however, to picture the special contacts which are involved, with the Budget Bureau and the Ministry of Finance, in all financial matters.)

VOCATIONAL PROGRAMS

Objectives and Descriptions

Vocational education now operates under the National Plan of Education (1960). The new educational structure is the 7-3-2-4 system, ending with the university degree, or the 7-3-3-2 system of the vocational line, the highest terminal point of which is graduation, by certificate, from a technical institute. (See chart 2). The bulk of the nation's vocational education activity is being rapidly formed into programs on three levels:

a. Three year programs of vocational education at lower secondary school.

b. Three year programs of vocational education at upper secondary school.

c. Two year programs of education at technical institute.

Under the new system the aim of elementary school is to give children elementary general education for the maximum development of their minds and bodies. Vocational education functions only at the secondary level and the higher education level. Before compulsory education was extended to 7 years, many vocational schools were offering programs at the U.S. 5-6-7 grade level; these programs have now been completely phased out, replaced by programs at the proper higher level.

Vocational Education at the Lower Secondary Level

Vocational education on this level aims at preparing students for entry into semi-skilled occupations. This means that the graduates are able to enter occupations which require a high degree of manipulative ability, alertness, and watchfulness. Wide knowledge of a work-field is not required, but judgments are needed in the tasks done.

The objectives of vocational curriculums at this educational level are as follows:

1. The students obtain knowledge and experiences necessary to enter semi-skilled occupations.

2. The students are able to continue studying at higher level.

3. The students can appreciate art, culture, and nature for useful living as a member of society.

The Vocational curriculum at this level does not exceed three school years in length. A school year is composed of 36 weeks, and a week of 35 school hours. Each curriculum strives to secure correlation among general subjects, specialized subjects and extra-curricular activities, to foster physical, mental, emotional and social growth. Generally speaking the percentage distribution of school hours by the area for the vocational curriculum at this level is 50 per cent for general subjects and 50 per cent for specialized subjects.

Vocational Education at the Upper Secondary Level

Education at upper secondary school immediately follows that at the lower secondary school level, and the purpose of upper secondary school is to give the students higher general and vocational education, based on the development of their minds and bodies by the education given at lower secondary school.

Vocational education at this level aims at preparing the students for entry into skilled occupations, jobs in which the worker uses independent judgment, has a high degree of hand skills, and is responsible for valuable products or equipment.

Generally, the objectives of the upper vocational school are to insure that:

1) The student obtains skills and knowledge necessary to enter a specialized field of the skilled occupations, and

2) The student develops qualities, habits and attitudes desirable for an effective worker, and useful members of the society.

The Vocational curriculum at this level is limited to three school years. A school year is composed of 36 weeks, and a week of 35 school hours. Generally speaking, the percentage distribution of school hours for the vocational curriculum at upper secondary level is as follows:

1)	General (core) subjects	23%
2)	Shop work (practice)	45%
3)	Theory and related subjects	32%

Technical Education

Education at this level immediately follows upper secondary education. The period of study at the technical institutes is either 2 years after the graduation from upper secondary education (vocational line-3 year course) or three years after graduation from upper secondary education (academic line-2 year-course).

The technical institutes are preparing those who desire to enter occupations at the technical level. The graduates are called "technicians". The objectives of technical education in Thailand are to:

1) Build up a greater number of technicians for the development of trades and industries,

2) Give an opportunity to graduates of upper secondary schools to pursue technical training,

3) Encourage and promote a broadened program of vocational training for adults,

4) Introduce the use of modern machines in keeping with the technological developments in various trades and industries, and

5) Provide technical training in some occupations for which no training exists or for which there is a great need.

Miscellaneous Schools

a. Short-course program

The vocational short-course program aims at the development of specific skills needed to enter less-skilled occupations or certain types of occupations for those who have not been employed, to help them progress in their occupations for those who are already employed, or to change occupations according to the interests and aptitudes of the trainees.

The period of training is generally from three to six months, or between 180-300 school hours. Courses offered fall into trade and industrial, and business and distributive areas.

b. Vocational Teachers College

The Department of Vocational Education has under its administration and supervision the Thewes Vocational Teachers College, located in Bangkok. The College has the responsibility to train vocational teachers in the various specialties. (Teacher training programs are carried on also in four other schools: Bangkok Technical Institute, two arts and crafts schools, and the Bangphra Agricultural College.)

PART II

DATA AND TRENDS

A considerable body of quantitative data is available relative to vocational education in Thailand. In fact, it seems probable that few people are fully aware of the magnitude and scope of the information which has been gathered, particularly during recent years. It is unlikely that, in the brief time available for this inquiry, much more than "a large proportion" of the total existing data has come under review. Even up to the moment of writing this paper, further data (or reports of the existence of further data) continue to arrive.

It is certainly true that no complete index or catalog of existing statistical data seems yet to have been created, either in the Ministry of Education or elsewhere. Such a "clearing house" would have speeded the preparation, and increased the value, of this paper to a substantial degree.

Just as a house designed for one family rarely suits perfectly the needs and desires of another family, so it is also with the nature and form of the already-gathered statistical data about education in Thailand when applied to some of the new questions with which the present inquiry was asked to deal. This is to be expected. The present data-gathering structure came into existence gradually, to meet a variety of needs as they developed and became apparent. This process is likely to continue, and to involve not merely the gathering of additional information but also the modifying of the form and the manner in which certain data are gathered, recorded, and used.

All education in Thailand is presently in the midst of an extensive and relatively rapid process of change and development. Within the present generation, the sheer quantity of the changes and growth compares numerically with that of a century or more in typical Western experience. Internal readjustments in program and structure are many and frequent. New programs are initiated and, after testing, either accepted or discarded. Occasionally, older programs and organizational arrangements are abandoned.

One by-product of this fluidity of the educational system is the extent to which it makes difficult the constructive comparison of statistical data over a given time period or, sometimes, between successive years. For example, the decision to extend compulsory education from a standard of four years to a standard of seven years was, quite reasonably, accompanied by a decision to eliminate, by phasing out, vocational schools at the 5-6-7 grade level. The raw enrollment figures for this vocational level begin a dramatic downward plunge at the effective date of this change.

A further consequence of this change appears (or perhaps is hidden) in the figures for pupil-teacher ratios. The former teachers at the 5-6-7 grade level were, many of them, insufficiently qualified to teach at higher levels and in other schools. To salvage their services for the Kingdom, as well as for their personal welfare, large numbers were placed in long-term programs of in-service training to upgrade their qualifications, and they were continued in employment status during that period. Although without students, they are included in teacher statistics and, inevitably, influence teacher-student ratios derived therefrom.

VOCATIONAL EDUCATION ENROLLMENTS AND TRENDS

Enrollments by vocational level are available for the five-year period, 1955-1962* (Table 1). The phase-out of the 5-6-7 grade level, already sharply declining, began in 1961. The 8-9-10 grade level developed a downward trend during the period. The 11-12-13 grade level remained stable. The 14-15 grade level showed a moderate increase, as did the teacher training enrollment. The growth in short-course enrollment reflects the ready acceptance of expanded services of this type, notably mobile training units.

The diverse nature of vocational education offerings is revealed in Tables 2a and 2b, which show enrollments by course and level over a three-year period, 1960-1962. At the 11-12-13 grade level, there have been strong increases in certain courses (auto mechanics, business administration, agriculture, electricity, machine shop, radio and television) and large declines in others (arts and crafts, foreign language, land survey, mechanical industry, building construction). In conjunction with the work under the University of Hawaii Contract, new programs in auto mechanics, electricity, machine shop, and radio have been initiated in a number of the boys trade schools at this level during this period. No clear-cut explanation of the other changes is readily available, although it should be mentioned that the number of agriculture schools increased from 17 to 21 during these three years. At the 14-15 grade level (technical) trends are not sharply sloped, with the exception of the sharp rise in the number of salesmanship students. With one or two exceptions, the teacher training enrollments have risen or declined in a pattern roughly paralleling the adjustments at the 11-12-13 grade level.

The rise in non-vocational enrollments (Table 3) at the 8-9-10 grade level seems certainly due to the provision of additional facilities, with the probable result that fewer students turned to vocational schools as a "this-or-nothing" solution to their desire to continue their education.

Applications-admissions ratios for the same years (Tables 4a, 4b, 4c, 4d) tend to support this theory by the lowering rate of applicant rejection at the 8-9-10 grade level of the vocational stream, apparently due almost entirely to fewer acceptable applicants. At the higher levels, the declining acceptance ratios seem surely to suggest that demand is increasing at a more rapid rate than facility expansion, although a lack of numerical data on the applicants rejected because of insufficient qualifications makes certainty impossible.

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*The years named, here and elsewhere, refer to the calendar year in which the school year begins.

Wastage figures (drop-outs and repeaters) are available only for 1960 and 1961 (Tables 5,5a), or rather for the losses occurring prior to the beginning of the next school year. It is unlikely that valuable conclusions can be made about this factor until there has been time for more data to become available.

The number of students graduating from various vocational levels parallels reasonably the growth or decline in enrollments (Table 6), with proper allowance for time lag.

STUDENTS IN VOCATIONAL SCHOOLS

There has been collected in Thailand less data about students than about other features of the vocational education system. Or, at least, less of such data has been forwarded to the Department of Vocational Education for recording and study. That which has come in, in systematic form, is limited almost entirely to enrollment and graduation statistics.

Determination of student qualifications for enrollment at any level rests upon two conditions: (1) successful attainment by the student of the level status in the school system at which the requested enrollment is authorized and (2) a checking, by academic examination, of the correctness of his assignment to that level. There are no data which indicate variable qualification requirements based upon the nature of the vocational program applied for.

Pass-retention figures are not available at the national level.

The gathering of statistical information by the Ministry about vocational graduate placement and follow-up is a very recently initiated matter (as are the activities themselves) and the procedures are in an exploratory and developmental stage at present. First attention has been given to the kinds of employers of graduates (Table 7). The Department of Public Welfare conducted a special survey in 1962 on vocational graduate placement; its most significant findings are discussed at the close of this paper.

Earnings in non-government employment are particularly difficult to ascertain, and no extensive formal effort to do so has been made.

Unemployed graduates are hard to identify and to enumerate, because of their assumed reluctance to report failure. In Table 7, for example, it must be deduced that those unemployed have remained anonymous and uncounted, within the larger category of non-response.

COSTS

Tables 8, 9 show that vocational education has, during the 10-year period covered, averaged just under 10% of the total Ministry budget. Breakdowns of the vocational education budget by category of expense are available for 1961, 1962 and 1963 (Tables 10a, 10b, 10c).

During this period, the amount set aside for wages and salaries averages almost exactly 60% of the total vocational budget, and the amount for instructional supplies, though climbing, averages about 1.88% of the total.

Operating and capital costs per student, under current methods of calculation, are shown in Tables 11, 12. The higher figures shown for the agriculture schools may be due in part to the fact that these schools, during the same period, have the fewest students per teacher (Table 20).

One broad caution needs to be observed in interpreting costs and expenditures. The national vocational education budget is only one of the sources of income of the vocational schools. They also derive income from student fees, a regular source. Irregular or fluctuating sources include donations of money or material things from individuals or groups in the community, and income from sale of school products and/or from services rendered (i.e. repair of automobiles, electrical appliances, radios, etc.). Financial benefit from technical assistance provided by other nations and by the United Nations is also a factor. Reporting and tabulation of these incomes has not been required to date.

TEACHERS IN VOCATIONAL SCHOOLS

The legally relevant measure of qualification of vocational teachers is one of scholastic achievement, and is related to (and influenced by) the regulations and operating practices of the Civil Service Commission. The distribution of teachers on this scale of qualification is shown in Table 13. Each type of school displays a wide range of teacher qualification on this scale, with the technical institutes showing a tendency to be "heavy" at either end of the range. About 7½% (352) of the total number are indicated as holding education degrees. About the same number (349) hold degrees of unspecified types.

There has been occasional discussion of the possibility of adding work experience (in the employment occupation to be taught) to the qualifications of teachers in those positions where it would be of value, but a method of doing so satisfactorily has not been developed.

Teacher years of service is shown in Table 14, by division of the Department. Information is not available at present, however, to indicate how much of this service was performed under other divisions of the Department, or elsewhere, but could eventually be tabulated from personnel records on file. The bulk of the teachers, about 75%, fall in the 0-10 year brackets reflecting, in part, the new courses and the general expansion in vocational education in the past decade. Tables 15, 16, 17, 18, 19 give similar data for the individual schools of certain divisions.

Table 20 shows calculations of teacher-student ratios on the basis of data currently on hand in the Department of Vocational Education. The remarks and footnotes appended to this table are particularly of note, since they indicate several precautions that should be observed in the interpretation of this data. Unfortunately, it is not possible to report the numerical magnitude of the influences noted.

Salary level distribution of teachers, by vocational division, and, for certain divisions, by school, is recorded in Tables 22 through 25. It may be noted that there is an invariable peak in the ฿800 - 1200 category. This should not be interpreted as being due to the general Civil Service Commission rule which demands supervisory responsibilities in higher-salaried positions. Teachers are specifically exempted from this rule and may advance to higher levels on the basis of ability, seniority, level of the school in which they teach, academic preparation and of course, successful passing of the appropriate examination. In the face of prevailing wages and salaries in the private sector (even the ultra-conservative figures generally published), the retention of the best teachers becomes a problem whose already great seriousness is steadily increasing. Without the prestige and security associated with government service, plus the personal devotion of many individuals to the welfare of the Kingdom and its people, the crisis would be even more severe.

CURRICULA AND PROGRAMS

It is usual, in the history of vocational education programs, for concepts (and programs) of guidance, counseling and placement to develop and mature only after a number of years of experience of actual program operation. Even on the accelerated time-scale which Thailand is following in the expansion of its educational system, the rather recent turning of major attention to these matters cannot be considered as overdue. There must be time for educators to conclude for themselves that such services are of genuine importance and utility. Such opinions often arise first at the "grass roots" level, in the school classroom or shop. They may, as in Thailand, simultaneously be recognized at the higher administrative levels. The interest and support of middle-level administration may be the last to develop.

Thailand appears to be at the stage where all but the last-mentioned development has occurred. The administrative organization has been created and has begun to function, exploring its assignment, experimenting with suitable techniques, and seeking data for its own guidance.

The development of curricula, even the determination of what training programs to offer, has presented Thailand with unusual difficulties. In the industrial countries of the western world, the vocational educator has relied upon three things for the solution of these problems: (1) rather elaborate statistical data about the nation's economy, assembled and compiled by the national government, (2) specific surveys, designed to secure the specific needed information, and (3) frequent personal contacts with employers and members of employers' organizations.

In Thailand, the national machinery for gathering economic data has not yet delivered it in a form which gives the educator a clear indication of the specific things which vocational education should do. Statistical data relates to job-clusters, within which neither the exact employment job(s) nor the level(s) of difficulty are usefully defined. This, presumably, will change. When employment jobs are given standard definitions and are statistically separated, the accuracy of planning for vocational education will quickly make great strides forward.

Good surveys for the determination of training needs require considerable amounts of time, money and personal services. All of these have been in short supply to the Department of Vocational Education. Nevertheless, a survey (the report of which is known as "The Plowden Report") was made, and formed the principal basis for the choice and location of the programs under development by the SEATO/University of Hawaii contract. Under this contract, from four to six training programs at the skilled level are being developed in each of 19 of the boys' trade schools (11-12-13 grade).

At other levels, notably the technical institutes, good beginnings have been made in the establishment of regular communication between school and the employer element in the community. Thai culture does not assist efforts in this direction, since traditional courtesy favors personal introduction by a mutual friend as the opening step to each new contact. Yet, although this slows the process, it does not stop it altogether, and progress is being made.

In short, the vocational education authorities are far from satisfied with the amount of factual information at their disposal about training needs and are attempting to increase and improve it, in the face of serious obstacles.

The Department of Vocational Education recognizes that a student should not be (and perhaps could not be) trained in school to the point where no further learning on the job will be required. The goal is rather (as mentioned in Part I of this paper) to train the student to the point of successful entry into the chosen occupation, a point at which his skill and knowledge are sufficient to have his employer consider him to be an economically worthwhile employee.

As a parenthetic final note to this working paper, it may be worthy of mention that, over a period of time, it would be possible to construct maps portraying the geographic distribution of various types and levels of vocational education in Thailand. The data for this are already at hand in the Department of Vocational Education.

In anticipation of the possibility that some graphic representation of the geographic distribution of present and future manpower requirements may soon appear, one set of data is included (Table 26) which makes a simple statistical division between the Bangkok-Thonburi area (known as the Central Area) and the balance of the Kingdom, by schools, students and teachers, for each type of vocational school.

Reference was made earlier to a survey of vocational graduates conducted in 1962 by the Department of Public Welfare. This inquiry consisted of a sampling, by mail, of the 1960 and 1961 graduates of public and private vocational schools of diverse levels and types in the Bangkok-Thonburi area only. Four thousand names of graduates were chosen to constitute a random sampling of the 25,466 graduated in those two years from the schools in the area. Replies were received from 1884 of those to whom the questionnaires were sent. Only 1831 of these replies were usable. The survey report states that more than one-fifth (837) of the questionnaires were undeliverable because of faulty addresses, and the nearly one-third balance (1279) were simply not returned.

If the survey had weaknesses, they were primarily in the methods of grouping the data. Also, the translation of the report from Thai to English may well have introduced terminology less accurate and precise than the original. In any event, occupations and schools are both treated in large, uncertainly-defined clusters, limiting seriously the inferences that soundly may be drawn from the data obtained.

Several points are made, however, which indicate the worth of such a follow-up study of vocational graduates. Of the 1831 usable responses, 1011 (about 55%) were employed; the balance were not. Of the 1011 employed, only 580 (about 57%) were working at jobs considered to be related to their training, according to one table in the survey report. The very next table lists 845 (about 83½%) of the same 1011 employed graduates as being "employed in the field prepared". Various internal evidence in the report leads to the conclusion that the larger figure is the true measure of this situation, but there is considerable danger of error, for the English reader at least.

Of the 820 unemployed graduates responding, 701 (over 85%) desired help (presumably government help) in finding employment. More than a third of the 1831 graduates, both employed and unemployed, reported they were in "continuing study", mostly part-time courses of some sort.

The final section of the report consists of a number of summarizing statements, one of which mentions that the survey reveals that 69% of the graduates are employed and 30.6% are unemployed. How these percentages are derived from the raw figures of 1831 returns, 1011 employed, and 820 unemployed, is not explained.

It has been suggested that the percentage of employment may be considerably higher among the 1279 who did not return the questionnaire. This is based on the thought that cooperating in the survey would be of less personal interest to graduates satisfactorily employed than to ones still concerned about getting a job. Also, it is probable that many of the 837 who did not receive their questionnaires are residents of the provinces, and likely employed. They have not "kept in touch" because they have not needed help.

ROLE OF VOCATIONAL EDUCATION

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VOCATIONAL EDUCATION - TABLE 1

Number of Vocational Students by Different Level

1958 - 1962

Year	Lower level (U.S.Grade 5-6-7)	Upper level (U.S.Grade 8-9-10)	Senior level (U.S. Grade 11-12-13)	Technical level (U.S.Grade 14-15)	Teacher training level	Short-Courses	Total
1958	13,483	23,257	24,377	3,308	1,026	335	65,786
1959	7,574	25,631	29,170	4,612	1,151	402	68,540
1960	2,955	24,479	28,634	4,897	1,404	1,945	64,314
1961	398	17,561	29,633	4,900	1,291	1,921	55,704
1962	235*	10,481	27,011	4,761	1,235	4,417	48,140
Total	24,645	101,409	138,825	22,478	6,107	9,020	302,484

* 1963 - No students; this level is no longer operated.

VOCATIONAL EDUCATION - TABLE 2a

Number of Vocational Students by Types of Course and Level, 1960-1962

a. Short Courses, Lower and Upper Levels.

Types of Course	Voc. Short-courses			Lower Level (U.S.Grade 5-6-7)			Upper Level (U.S.Grade 8-9-10)		
	1960	1961	1962	1960	1961	1962	1960	1961	1962
Wood working				1943	189	18	11685	8416	5144
Building const.							20	100	44
Masenry				298	50		227	187	198
Painting				29			44	69	83
Small boat building				28			79	85	44
Mechanical Trade							212	110	49
Automechanic							464	331	127
Machinist							201	152	87
Welding							127	103	46
Metal work				60			211	108	43
Electricity							90	83	53
Radio & T.V.							109	77	37
Ceramics							33	12	8
Nielloware				13			20	17	13
Pottery				24	4		27	26	19
Girl's trade				101	31	16	8016	5262	2761
Weaving							78	29	49
Hair-cutting(Barbering)				260					
Tailoring							18	22	30
Foreign Language							113	77	39
Leather work					12		87	81	70
Agriculture				31			2472	2069	1537
Primary extension				168	112	201	146	145	
Voc. Short-courses	1945	1921	4417						
T O T A L	1945	1921	4417	2955	398	235	24479	24479	10481

VOCATIONAL EDUCATION - TABLE 2b

Number of Vocational Students by Types of Course and Level, 1960-1962

b. Senior, Technical, and Teacher Training Level

Types of Course	Senior Level (U.S.Grade 11-12-13)			Technical Level (U.S.Grade 14-15)			Teacher Training Level		
	1960	1961	1962	1960	1961	1962	1960	1961	1962
Wood Working	4119	4713	5477					20	41
Building Construct.	2716	2913	1190	803	744	753	29	41	62
Masonry		30	25						
Drafting	36	15	14	6	11	16			
Small Boat Building			19						
Mechanical Indust.	6257	5119	3557				122	94	43
Automechanic	137	508	760	781	860	791	18	25	54
Machinist	41	323	494			7		20	40
Welding		267	385						
General Metal		49	64						
Metal Work	60	65	57	225	277	284	7	25	43
Electricity	128	305	396	433	526	503	3	45	54
Radio & T.V.		94	288	423	453	382	3	5	33
Indus.Tech.Training				98	273	229			1
Indus. Arts Teacher Training.				133			55	129	159
Ceramics		16	34						
Art & Craft	899	595	360	189	198	193	718	569	491
Nielloware		24	36						
Photography	79	76	65	45	34	35	1	2	
Printing	102	101	93	49	51	51		2	1
Girl's Trade	5558	7170	7232						
Weaving			26						
Cloth & Dress				336	340	305	34	10	16
Food & Nutrition				279	298	296	26	12	14
Tailoring	161	158	106	32	31	39	7	4	4
Secretary	673	507	300	262	248	233	13	6	5
Accounting			545	399	390	437	14	11	7
Business Administration.		61	243			27			
Salesman			41	35	85	97			1
Commercial Trade	5980	4899	2642		17				
Foreign Language	511	428	317						
Tech.preparatory (explore)	111	35	132	300					
Land Survey	340	283	264	69	64	77	4	4	
Leather Work	40	66	56						
Agriculture	610	813	1244				350	267	166
Home Economics	76		49						
Pipe Welding						6			
Total ...	28634	29633	27011	4897	4900	4761	1404	1291	1235

VOCATIONAL EDUCATION - TABLE 3

A. Vocational Enrollments, By Level, Compared with Other Streams, 1958-1961

YEAR	LOWER LEVEL (U.S. Grade 5-6-7)		UPPER LEVEL (U.S. Grade 8-9-10)		SENIOR LEVEL (U.S. Grade 11-12-13)	
	Voc.	Other	Voc.	Other	Voc.	Other
1958	13483	316668	23257	166255	24377	15549
1959	7574	347161	25631	191022	29170	22380
1960	2955	365954	24479	213254	28634	26155
1961	398	375413	17561	236244	29633	34512

B. Vocational Enrollments Compared With Other Stream at Similar Levels, Technical, Teacher Training and Short-Courses Levels

YEAR	TECHNICAL LEVEL (U.S. Grade 14-15)		TEACHER TRAINING LEVEL		SHORT-COURSES	
	Voc.	Other	Voc.	Other	Voc.	Other
1958	3308	No Comparable Data	1026	12652	335	-
1959	4612		1151	15064	402	-
1960	4897		1404	15700	1945	-
1961	4900		1291	15390	1921	-
1962	4761		1235	18201	4417	-

C. Enrollment Changes, by Level, 1958-1961

LEVEL	VOCATIONAL		OTHER STREAMS	
	Numerical	Per Cent	Numerical	Per Cent
Grade 5-6-7	- 13,085	- 97.0	+ 58,545	+ 18.5
Grade 8-9-10	- 5,696	- 24.5	+ 69,989	+ 42.1
Grade 11-12-13	+ 5,256	+ 21.5	+ 18,963	+ 121.9
*Technical Grade 14-15	+ 1,592	+ 48.1	No Comparable Data	
*Teacher Training	+ 209	+ 20.3	+ 5,549	+ 43.9
*Short Courses	+ 4,082	+1,218.5	No Comparable Data	

* Change, 1958-1962

VOCATIONAL EDUCATION - TABLE 4a

Number of Applications and Admissions at Different Vocational School Levels, 1960

Types of School	Upper Level (U.S. Grade8-9-10)		Senior Level (U.S.Grade11-12-13)		Technical (U.S.Grade 14-15)		Teacher Training	
	Applic.	Admiss.	Applic.	Admiss.	Applic.	Admiss.	Applic.	Admiss.
Teacher Training							-	-
Technical			1200	711	4965	2369	374	214
Agriculture	936	936	261	261			120	120
Art & Craft			151	151	93	93	111	111
Building Construction.	58	52	772	761	213	90		
Mechanical Trade	30	30	2133	1314			44	44
Commercial Trade			1390	1325				
Foreign Language	93	93	279	279				
Tailoring	8	8	92	80				
Boy Trade	5085	4353	2098	1674				
Girl Trade	2454	2356	3467	2499				
Leather Work	20	20	30	20				
Small Boat Building	12	12						
Weaving	5	5						
Nielloware	1	1						
Short-courses 1945 (admiss.)								
Total ...	8702	7866	11873	9075	5271	2552	649	489

VOCATIONAL EDUCATION - TABLE 4b

Number of Applications and Admissions at Different Vocational School Levels, 1961

Type of School	Upper Level (U.S.Grade 8-9-10)		Senior Level U.S.Grade 11-12-13)		Technical (U.S.Grade 14-15)		Teacher Training	
	Applic.	Admiss.	Applic.	Admiss.	Applic.	Admiss.	Applic.	Admiss.
Teacher training							734	141
Technical			1354	924	5327	2273	615	193
Agriculture	727	680	446	440			59	46
Art & Craft			643	209	318	77	174	51
Building construction	36	36	1138	748	145	66		
Mechanical Trade	26	26	2563	1240				
Commercial trade			2512	1183				
Foreign language			707	344				
Tailoring	9	9	49	49				
Boy trade	2398	2161	4214	3442				
Girl trade	908	889	3842	2363				
Leather work	28	28	21	21				
Small boat building	8	8						
Weaving	22	22						
Nielloware	2	2	24	24				
Short-courses 2775 (admiss.)								
TOTAL	4164	3861	17513	10987	5790	2416	1582	431

VOCATIONAL EDUCATION - TABLE 4c

Number of Applications and Admissions at Different Vocational School Levels,1962.

Types of School	Upper Level (U.S.Grade 8-9-10)		Senior Level (U.S.Grade 11-12-13)		Technical (U.S.Grade 14-15)		Teacher Training	
	Applic.	Admiss.	Applic.	Admiss.	Applic	Admiss.	Applic.	Admiss
Teacher Training							780	271
Technical			1696	836	7902	2005	808	140
Agriculture	343	339	504	354	433	308	96	35
Art & Craft			294	195	270	122	553	171
Building Construction	77	70	760	679	178	76		
Mechanical Trade	10	10	2865	1140	532	28		
Commercial Trade			3414	1356				
Foreign Trade			417	302				
Tailoring	15	14	35	33				
Boy Trade	1267	1212	3064	2633				
Girl Trade	585	512	2834	2572				
Leather work	33	31	23	23				
Small boat building			19	19				
Weaving	28	28	26	26				
Nielloware			21	21				
Short-courses 3588 (admiss.)								
Total	2358	2216	15972	10189	9315	2539	2237	617

VOCATIONAL EDUCATION - TABLE 4d

Application - Admission Ratios, by Level, 1960 - 1962

(Number Admitted per 100 Applications)

LEVEL	YEAR 1960	1961	1962
Grade 8-9-10	90	93	94
Grade 11-12-13	76	68	64
Grade 15-15	48	42	27
Teacher Training	75	27	28

VOCATIONAL EDUCATION - TABLE 5a

Number of Failures and Drop outs at Different Levels, 1960

TYPES OF COURSE	Upper Level (U.S. Grade 8-9-10)			Senior Level (U.S. Grade 11-12-13)			Technical Level (U.S. Grade 14-15)			Teacher Training			REMARKS
	Total Number	Fail or Drop out	Percentage	Total No.	Fail or Drop out	Percentage	Total No.	Fail or Drop out	Percentage	Total No.	Fail or Drop out	Percentage	
Voca. Teacher Training Coll.													
Technical Institute				2055	452	22.0	4522	591	13.1	214	11	5.1	1)Vocational Teacher Training College Start Training in 1960
Agriculture College				333	49	14.7				146	11	7.5	
Agriculture School	2472	407	16.5	277	53	18.1				204	8	3.9	
Art and Craft				899	83	9.2	189	1	0.53	718	18	2.5	
Building Construction	98	17	17.5	2966	473	15.8	186	15	8.1				
Mechanical Trade	79	6	7.6	6097	743	12.2				122	3	2.46	
Commercial Trade			.	5790	641	11.1							
Foreign Language	259	22	8.5	1078	144	13.3							
Tailoring	18	1	5.5	161	25	15.5							
Boys Trade School	13243	2756	20.8	3379	551	16.3							
Girls Trade School	8049	1151	14.3	5558	609	10.9							
Leather Work	84	16	19.0	40	1	2.5							
Small Boat Building	79	9	11.4										
Wearing	78	9	11.4										
Neillo-Ware	20	9	45.0										
TOTAL	24,479	4,403	18.0	28,623	3,824	13.3	4,897	607	12.4	1,404	51	3.63	

VOCATIONAL EDUCATION - TABLE 5b

Number of Failures and Drop outs at Different Levels, 1961

TYPES OF COURSE	Upper Level (U.S. Grades 8-9-10)			Senior Level (U.S. Grades 11-12-13)			Technical Level (U.S. Grades 14-15)			Teacher Training			REMARKS
	Total Number	Fail or Drop out	Percentage	Total No.	Fail or Drop out	Percentage	Total No.	Fail or Drop out	Percentage	Total No.	Fail or Drop out	Percentage	
Voca. Teacher Training Coll.										141	2	1.4	
Technical Institute				1891	506	26.8	4552	595	13.1	220	2	0.9	
Agriculture College				411	79	19.2				140	1	0.7	
Agriculture School	2069	202	9.8	402	26	6.5				127	1	0.79	
Art and Craft				595	41	6.9	198	1	0.5	569	15	2.6	
Building Construction	151	13	8.6	2587	373	14.4	150	35	23.3				
Mechanical Trade	80	27	33.8	4921	507	10.3				94	3	3.2	
Commercial Trade				4653	619	13.3							
Foreign Language	77	2	2.6	986	177	17.9							
Tailoring	22	5	23.7	158	49	31.0							
Boys Trade School	9675	855	8.8	5753	621	10.8							
Girls Trade School	5275	171	3.2	7186	374	5.2							
Leather Work	81	12	14.8	66	15	22.8							
Small Boat Building	85	19	22.4										
Wearing	29	1	3.5										
Niello-Ware	17	-	0	24	5	20.8							
T O T A L	17,561	1,307	7.6	29,633	3,392	11.7	4,900	631	12.9	1,291	24	1.85	

VOCATIONAL EDUCATION - TABLE 6

Number of Vocational School Graduates by Level of Education, 1957-1962

YEAR	Lower Voc. Level* (U.S.Grade 5-6-7)	Upper Voc. Level (U.S.Grade 8-9-10)	Senior Voc. Level (U.S.Grade 11-12-13)	Technical Level (U.S.Grade 14-15)	Teacher Training Level
1957	4,648	4,964	2,809	630	375
1958	3,962	5,992	3,949	900	467
1959	2,754	6,291	6,172	1,346	648
1960	670	6,296	8,050	1,597	667
1961	183	5,949	8,796	1,673	730
1962	32	4,676	7,148	2,454	708
1957-62 Change	(Level discontinued)	- 3.7%	+154.4%	+448.3%	+88.8%

*Lower Vocational Level has been abolished since 1960

VOCATIONAL EDUCATION - TABLE 7

Employment of Graduate
From the
Technical Institute, Bangkok, 1958-1962

Field of Study	Year	Number of Graduates	Government Service	Private Organization	Further Study	No Info.
Teacher Training	1958	147	147	-	-	-
	1959	187	178	11	-	-
	1960	159	149	9	1	-
	1961	99	97	1	1	-
	1962	107	73	-	-	30
Accountancy	1958	76	12	5	-	59
	1959	102	15	5	-	82
	1960	102	27	12	-	63
	1961	43	7	10	-	26
	1962	-	-	-	-	-
Secretarial	1958	49	9	-	-	40
	1959	80	5	4	-	71
	1960	55	1	4	-	50
	1961	66	12	4	-	50
	1962	-	-	-	-	-
Nutrition	1958	87	25	-	-	62
	1959	69	14	-	-	55
	1960	55	27	2	-	26
	1961	56	12	-	-	44
	1962	-	-	-	-	-
Dressmaking	1958	80	10	-	-	70
	1959	69	19	11	-	39
	1960	76	24	11	1	40
	1961	63	26	17	4	16
	1962	-	-	-	-	-
Tailoring	1958	20	16	-	-	4
	1959	21	9	3	-	9
	1960	16	5	4	-	7
	1961	17	5	4	-	8
	1962	13	7	5	-	1
Retailing	1961	17	-	5	-	12
Building Construction	1958	101	27	-	-	74
	1959	107	35	-	-	72
	1960	121	37	-	-	84
	1961	172	45	-	-	127
	1962	-	-	-	-	-

TABLE 7 - Continued

Field of Study	Year	Number of Graduates	Government Service	Private Organization	Further Study	No Info.
Auto Mechanics	1958	46	39	7	-	-
	1959	93	76	6	-	11
	1960	77	63	13	-	1
	1961	126	77	14	-	35
	1962	-	-	-	-	-
Electrical	1958	54	44	4	4	2
	1959	63	46	11	5	1
	1960	85	77	3	2	3
	1961	102	89	6	1	6
	1962	-	-	-	-	-
Metal Trades	1958	61	5	1	-	55
	1959	72	8	8	-	56
	1960	42	26	-	-	16
	1961	-	-	-	-	-
	1962	-	-	-	-	-
Radio	1958	71	25	2	-	44
	1959	73	35	5	-	55
	1960	74	16	-	-	58
	1961	147	18	2	-	127
	1962	-	-	-	-	-
Industrial Arts (Teachers)	1960	52	23	-	-	29
	1961	63	34	2	-	27
	1962	-	-	-	-	-
Industrial Arts (Regular)	1961	46	17	-	-	29
	1962	-	-	-	-	-
Printing	1958	19	17	2	-	-
	1959	19	16	-	-	-
	1960	24	18	4	-	2
	1961	21	14	4	-	3
	1962	-	-	-	-	-
Surveying	1958	134	82	7	44	1
	1959	155	110	4	41	-
	1960	136	104	-	32	-
	1961	141	89	3	35	14
	1962	140	95	3	38	4
Photography	1958	8	5	3	-	-
	1959	16	11	5	-	-
	1960	24	20	4	-	-
	1961	18	14	4	-	-
	1962	16	12	1	-	3

TABLE 7 - Continued

Field of Study	Year	Number of Graduates	Government Service	Private Organization	Further Study	No Info.
Carpentry	1958	48	2	1	-	45
	1959	36	1	-	-	55
	1960	34	5	-	-	29
	1961	55	3	-	-	52
	1962	-	-	-	-	-
TOTAL		4823	2411	256	209	1847

SUMMARY

	Number	% of Total	% of Responses
Graduates	4823	100	-
No reply	1947	40	-
Responses	2876	60	100
Gov't Service	2411	50	84
Private Job	256	05.3	09
Advanced Study	209	04.7	07

VOCATIONAL EDUCATION - TABLE 8

Percentage of National Education Budget Devoted to Vocational Education, 1954-1962

Year	% for Vocational Education
1954	11.62
1955	12.22
1956	9.89
1957	9.81
1958	12.55
1959	7.49
1960	7.27
1961	6.79
1962	7.49

VOCATIONAL EDUCATION - TABLE 9

National Budget in Vocational Education Compared with Ministry Budget, 1954-1963

YEAR	MINISTRY TOTAL	VOCATIONAL EDUCATION
1954	300,987,713	34,970,224
1955	250,979,271	30,674,974
1956	268,719,768	26,584,084
1957	267,681,590	26,251,314
1958	442,883,643	55,591,775
1959	1,267,742,943	94,973,859
1960	1,236,365,741	89,986,795
1961*	1,026,155,910	69,769,918
1962	1,468,425,000	109,982,100
1963		121,555,500

* Due to a change in the fiscal year of the Government of Thailand, the 1961 budget covers the period January 1 - September 30 only. The new fiscal year runs from October 1 to September 30.

VOCATIONAL EDUCATION - TABLE 10a

National Budget in Vocational Education by Categories, 1961

Types of Expenditure Code Number	Wages & Salary	Janiter & Driver Wages	Remmuner-ation	Ordinary Expense	Materials & Supplies	Equip-ment	Sites & Buildings	Subsidy	Other Expense	TOTAL
1281 -01	625,500	8,100	4,819	21,200	40,900	-	-	23,181	-	723,700
1281 -02	184,500	-	200,000	48,600	34,200	-	-	-	-	467,300
1281 -03	129,150	-	-	10,824	1,425	-	-	-	-	141,399
1282 -01	24,605,250	1,161,700	275,656	164,970	75,000	470,000	2,380,000	2,124,500	-	31,257,076
1282 -02	8,953,200	236,798	3,538,078	242,633	127,500	311,990	2,460,000	-	184,165	16,054,814
1282 -03	4,972,350	400,424	848,990	360,000	395,280	496,200	2,040,000	175,000	-	9,688,244
1282 -04	3,982,500	703,118	206,767	90,000	115,000	497,300	840,000	2,766,640	-	9,201,325
1282- 05	367,200	10,800	1,080,125	80,130	150,000	141,380	-	10,000	-	1,839,635
1283 -01	357,300	-	2,500	18,000	18,625	-	-	-	-	396,425
TOTAL	44,176,950 63.30%	2,520,940 3.62%	6,156,935 8.84%	1,036,357 1.48%	957,930 1.37%	1,916,870 2.74%	7,720,000 11.20%	5,099,321 7.29%	184,615 0.26%	69,769,918 100%

NOTE:

Code Number		Denote	Code Number		Denote
1281 -01	=	Administration	1282 -02	=	Business and Industrial School
1281 -02	=	Administration	1282 -03	=	Technical Institute
1281 -03	=	Supervisory & In-Service Teacher Training	1282 -04	=	Agricultural School
1282 -01	=	Trade Schools Training	1282 -05	=	Vocational Short Courses
			1283 -01	=	Building Construction Design

VOCATIONAL EDUCATION - TABLE 10b

National Budget in Vocational Education by Categories, 1962

Types of Expenditure Code Number	Wages & Salary	Janiter & Driver Wages	Remuneration	Ordinary Expense	Materials & Supplies	Equipment	Sites & Buildings	Subsidy	Other Expense	TOTAL
1281 -01	1,089,300	17,700	6,500	50,000	54,600	55,000	-	5,000	-	1,278,100
1281 -02	283,800	-	290,000	47,600	45,600	-	-	-	-	667,000
1281 -03	243,000	-	-	7,000	1,900	-	-	-	-	251,900
1282 -01	35,741,900	1,888,800	380,000	450,000	300,000	1,100,000	7,386,600	3,050,000	-	50,297,300
1282 -02	12,819,900	378,900	2,952,000	443,500	594,000	4,593,000	1,570,000	-	-	23,351,300
1282 -03	7,206,500	632,500	1,200,000	450,000	561,000	703,800	5,180,000	253,300	-	16,187,200
1282 -04	6,121,500	1,030,900	276,000	140,000	258,600	415,400	1,900,000	4,081,900	-	14,224,300
1282 -05	848,400	24,000	1,442,000	157,000	226,500	303,800	70,000	14,000	-	3,085,700
1283 -01	579,100	-	3,300	24,000	32,900	-	-	-	-	639,300
TOTAL	64,933,500	3,972,800	6,549,800	1,769,100	2,075,100	7,171,000	16,106,600	7,404,200	-	109,982,100
	59.00%	3.64%	5.96%	1.62%	1.88%	6.52%	14.65%	6.73%	-	100%

NOTE:

Code Number		Denote	Code Number		Denote
1281 -01)	=	Administration	1282 -03	=	Technical Institute
1281 -02)			1282 -04	=	Agricultural Schools
1281 -03	=	Supervisory and In-Service Teacher Training	1282 -05	=	Vocational Short Courses
1282 -01	=	Trade School Training	1283 -01	=	Building Construction Design
1282 -02	=	Business Industrial Schools			

VOCATIONAL EDUCATION - TABLE 10c

National Budget in Vocational Education by Categories, 1963

Types of Expenditure Code Number	Wages & Salary	Janiter & Driver Wages	Remuneration	Ordinary Expense	Materials & Supplies	Equipment	Sites & Buildings	Subsidy	Other Expense	TOTAL
1281 -01	906,300	40,200	11,000	65,000	65,000	6,000	40,000	-	-	1,133,500
1281 -02	285,900	-	503,600	100,000	82,100	-	-	-	-	971,600
1281 -03	349,800	4,800	32,000	85,600	5,000	10,800	-	-	-	488,000
1282 -01	37,739,300	2,140,200	500,000	550,000	573,000	1,444,400	9,356,000	2,944,000	-	55,246,900
1282 -02	14,070,000	425,100	635,000	540,000	700,000	3,944,800	2,030,000	-	-	22,344,900
1282 -03	8,817,500	720,600	1,200,000	595,600	650,000	3,882,900	4,790,000	200,000	-	20,856,600
1282 -04	6,789,800	1,124,000	293,000	250,000	470,000	493,800	4,003,600	3,241,400	-	16,665,600
1282 -05	882,700	36,600	1,442,000	154,500	226,500	188,500	10,000	14,000	-	2,954,800
1283 -01	734,200	-	9,700	49,700	100,000	-	-	-	-	893,600
T O T A L	70,575,500	4,491,500	4,626,300	2,390,400	2,871,600	9,971,200	20,229,600	6,399,400	-	121,555,500
	58.10%	3.70%	3.80%	1.97%	2.36%	8.21%	16.60%	5.26%		100%

N O T E :

Code Number		Denote
1281 -01)	=	Administration
1281 -02)		
1281 -03	=	Supervisory and In-Service Teacher Training
1282 -01	=	Trade School Training
1282 -02	=	Business Industrial Schools
1282 -03	=	Technical Institute
1282 -04	=	Agricultural Schools
1282 -05	=	Vocational Short Courses
1283 -01	=	Building Construction Design

VOCATIONAL EDUCATION - TABLE 11

Per Pupil Operating Costs by Types of Schools, 1961-1963

Types of School	Total National Budget for Operating Expense (Baht)	Number of Students	Baht per Student	Remark
Trade School				
Year 1961	31,257,076	28,658	1,090	1. National budget in 1961 allotted for January 1 to September 30 (9 months) only.
1962	50,297,300	22,553	2,215	
1963	55,246,900	-	-	
Business & Industrial				
Year 1961	16,054,814	15,498	1,035	and the budget for 1962 covers from October 1 to September 30.
1962	23,351,300	11,712	1,990	
1963	22,344,900	-	-	
Agriculture				
Year 1961	9,688,244	3,176	3,090	2. The number of students in 1963 is not yet available.
1962	16,187,200	2,962	5,450	
1963	20,856,600	-	-	
Technical				
Year 1961	9,201,325	6,804	1,350	
1962	14,244,300	6,849	2,080	
1963	16,655,600	-	-	
Short-Course				
Year 1961	1,839,635	1,568	1,170	
1962	3,085,700	4,064	760	
1963	2,954,800	-	-	

VOCATIONAL EDUCATIONAL - TABLE 12

Per Pupil Capital Costs by Types of Schools

Types of School	Total National Budget for Capital Expense (Baht)	Number of Students	Baht per Student	Remark
Trade School				
Year 1961	2,850,000	28,658	100	1. National budget in 1961 allotted for January 1 to September 30 (9 months) only.
1962	8,486,600	22,553	377	
1963	10,800,400	-	-	
Business & Industrial				
Year 1961	2,771,990	15,498	179	And the budget for 1962 covers from October 1 to September 30.
1962	6,163,000	11,712	526	
1963	5,974,800	-	-	
Agriculture				
Year 1961	2,536,200	3,176	800	2. The number of students in 1963 is not yet available.
1962	5,883,800	2,962	1,965	
1963	8,672,900	-	-	
Technical				
Year 1961	1,337,300	6,804	193	
1962	2,315,400	6,849	338	
1963	4,497,400	-	-	
Short-Course				
Year 1961	141,380	1,568	90	
1962	303,800	4,064	75	
1963	198,500	-	-	

VOCATIONAL EDUCATION - TABLE 13

Vocational Teacher Qualifications by Types of School, 1962

TYPES OF SCHOOL		DEGREE				TEACHER TRAINING CERTIFICATE							NO TEACHING CERTIFICATE							TOTAL
		Foreign Degree	Bachelor in Education	Bachelor Degree and Teaching Certificate	Bachelor Degree	Secondary Teacher Training Certificate	Post Primary Teacher Training Certificate	Primary Teacher Training Certificate	Secondary Vocational Teacher Training Certificate	Post Primary Vocational Teacher Training Certificate	Primary Vocational Teacher Training Certificate	Technical and Teaching Certificate	Technical Diploma	University Diploma	Physical Education	Higher Vocational Certificate	Upper Vocational Certificate	Lower Vocational Certificate	Unclassified	
Trade School	Boy	-	19	-	5	37	105	30	29	359	-	144	81	4	24	215	375	59	121	1607
	Girl	1	93	16	6	53	43	23	95	186	19	184	27	2	10	214	148	-	30	1150
Commercial & Industrial		27	71	85	76	54	8	2	42	17	20	111	83	6	23	55	25	3	166	874
Agricultural		12	12	1	52	45	17	8	96	94	-	-	10	4	10	13	29	1	13	417
Technical Institute and Teacher Training		56	53	-	108	12	-	-	-	-	-	-	185	-	-	-	-	-	127	541
Short-Course		2	-	2	4	-	1	-	3	6	-	18	17	1	-	8	5	7	7	81
Totals		98	248	104	251	201	174	63	265	662	39	457	403	17	67	505	582	70	464	4670
Type Totals		701				1861							2108							4670

VOCATIONAL EDUCATION - TABLE 14

Number of Years of Service of Vocational Teachers, by Divisions, 1962.

Divisions	Years Service					Total
	1 - 5 yr.	6 - 10 yr.	11-15 yr.	16-20 yr.	21 yrs. up	
1. Trade Schools : Boy	739	445	153	114	156	1,607
: Girl	366	316	154	143	171	1,150
2. Commercial & Industrial Schools	523	190	41	60	60	874
3. Agricultural Schools	207	89	34	43	44	417
4. Technical Institute & Teacher Training.	325	143	37	16	20	541
5. Voc.Promotion (Short Courses)	37	20	12	4	8	81
Total ...	2,197	1,203	431	380	459	4,670

VOCATIONAL EDUCATION - TABLE 15

Number of Years Service for Teachers under the Division of Technical Institute, 1962

NAME OF TECHNICAL INSTITUTES	YEARS SERVICE					TOTAL	REMARKS
	1-5 yrs.	6-10 yrs.	11-15 yrs.	16-20 yrs.	20 yrs. up		
Bangkok Technical Institute	71	90	18	10	8	197	
Thonburi Technical Institute	42	11	2	-	4	59	
Theves Vocational Teacher Training	35	11	5	1	2	54	
Thonburi Building Construction Ins.	13	-	2	2	1	18	
Songkla Technical Institute	45	16	3	1	3	68	
Nakornrajsima Technical Institute	60	9	4	2	-	75	
Chiengmai Technical Institute	59	6	3	-	2	70	
TOTAL	325	143	37	16	20	541	

VOCATIONAL EDUCATION - TABLE 16

Number of Years Service for Teachers under the Division of Trade Schools, 1962.

Name of Schools	Years of Service					Total	Remark
	1-5 yr.	6-10 yr.	11-15 yr.	16-20 yr.	21 yr. up		
Boys Trade Schools	739	445	153	114	156	1,607	
Girls Trade Schools	366	316	154	143	171	1,150	

VOCATIONAL EDUCATION - TABLE 17

Number of Years Service for Teachers under the Division of Agriculture

Name of Schools	Years of Service					Total	Remark
	1-5 yr.	6-10 yr.	11-15 yr.	16-20 yr.	21-yr.up		
Chiengmai Agriculture College	16	11	8	2	6	43	
Bangpra " "	18	3	2	1	-	24	
Surin " School	15	5	5	9	3	37	
Nakonsritamraj " "	21	6	-	-	4	31	
Pranakonsriayutaya "	18	4	2	8	7	39	
Karasin " "	7	5	-	3	2	17	
Nan " "	10	7	1	1	4	23	
Burirum " "	10	7	3	2	1	23	
Nakonpatom " "	10	4	1	7	2	24	
Nakonrajsrima " "	5	3	-	1	5	14	
Srisaket " "	9	2	2	2	2	17	
Songkla " "	7	5	1	-	-	13	
Pitsanuloke " "	9	5	2	-	-	16	
Chaiyapum " "	5	4	2	1	2	14	
Patumtani " "	10	5	-	2	2	19	
Trang " "	9	5	3	-	1	18	
Cholburi " "	10	3	1	2	1	17	
Chumpon Short Course of Agriculture	5	2	-	-	-	7	
Udontani " " "	4	-	-	-	2	6	
Lopburi Farmer School	5	2	-	-	-	7	
Prachinburi Farmer School	4	1	1	1	-	7	
TOTAL	207	89	34	42	44	416	

VOCATIONAL EDUCATION - TABLE 18

Number of Years Service for Teachers under the Commercial & Industrial Division, 1962

Name of School	Years of Service					Total	Remark
	1-5 yr.	6-10 yr.	11-15 yr.	16-20 yr.	21 yr. up		
Art and Craft School	40	20	4	7	10	81	
North Bangkok Technical School (Thai) German)	43	4	2	1	1	51	
Patumvan Mechanical Trade School	62	28	3	5	2	100	
North Mechanical Trade School	55	6	-	1	3	65	
Lopburi Mechanical Trade School	30	1	-	-	-	31	
Nonburi Mechanical Trade School	41	2	-	-	1	44	
Utaintavai Building Construction Sch.	36	35	10	4	9	94	
Dusit Building Construction School	24	15	3	2	7	51	
Bangkok Tailoring School	5	7	4	8	9	33	
Bangkok Commercial School	17	42	10	21	7	97	
Dhonburi Commercial School	69	2	1	1	3	76	
Chetupon Tangtongchit Commercial Sch.	69	3	-	-	1	73	
Bopitpimuk Secretary Language School	18	25	4	9	7	63	
Telecommunication School (Thai-Japan)	14	-	-	1	-	15	
T O T A L	523	190	41	60	60	874	

VOCATIONAL EDUCATION - TABLE 19

Number of Years Service for Teachers
Under the
Division of Vocational Promotion (Short Courses), 1962

NAME OF SCHOOLS	YEARS OF SERVICE					TOTAL
	1-5 yr.	6-10 yr.	11-15 yr.	16-20 yr.	21 yr. up	
1. Sarapatchang (Wat Saket)	18	6	1	-	-	25
2. Wat Kaew Fa	2	5	10	-	6	23
3. Wat Thong Thamachat	8	3	1	3	2	17
4. Printing Center	3	-	--	-	-	3
5. Mobile Unit (South)	4	3	--	-	-	7
6. Mobile Unit (Northeast)	2	3	--	1	-	6
T O T A L	37	20	12	4	8	81

VOCATIONAL EDUCATION - TABLE 20

Teacher-Student Ratio by Types of Schools, 1961-1963

(1) Types of School	Year	(2) Number of Teachers (Regular)	(3) Number of Students	Teacher-Student Ratio (2) : (3)	Remark
Trade School (Boy and Girl)	1961	2,782	28,658	1:10.3	(1) The number of special teachers is not counted. (2) Most of the special teachers teach in Technical and Short-Course levels. (3) The number of students in 1963 is not available. (4) There are a number of unqualified teachers in the division of Trade School and Agricultural School since the lower level has been phased out.** (5) There are a number of teachers who do not teach but do administrative work (usually there are about 3-5 in each School).
	1962	2,769	22,553	1:8.1	
	1963	2,757	-	-	
Commercial and Industrial School	1961	898	15,498	1:17.2	
	1962	955		1:12.3	
	1963	874	-	-	
Agriculture School	1961	467	3,176	1:6.8	
	1962	388	2,962	1:7.6	
	1963	417	-	-	
Technical and Teacher Training	1961	475	6,807	1:14.4	
	1962	559	6,849	1:12.2	
	1963	541	-	-	
Short-Course	1961	39	1,568*	1:20.1	
	1962	68	4,068*	1:30	
	1963	81	-	-	

* 6 months course, the number of students is divided by 2 to obtain the ratio.
** These teachers are in in-service training for upgrading to qualified status.

VOCATIONAL EDUCATION - TABLE 21

Salary Levels of Vocational Teachers by Divisions, 1962

Divisions	Range of Salary (in Baht per month)						Total
	450-750	800-1200	1300-1750	1900-2650	2800-4300	4600 up	
1. Trade School : Boy	832	707	49	18	1	-	1,607
: Girl	312	707	97	29	5	-	1,150
2. Commercial & Industrial School	134	510	136	82	12	-	874
3. Agricultural School	156	183	53	20	5	-	417
4. Technical Institute & Teacher Training	45	343	66	76	9	2	541
5. Voc.Promotion (Short Courses)	31	40	7	3	-	-	81
Total ...	1,510	2,490	408	228	32	2	4,670

Vocational Education - Table 22

Salary Levels of Vocational Teachers under the Division of Commercial & Industrial, 1962

Names of Schools	Range of Salary (in Baht per month)						Total	Remark
	450-750	800-1200	1300-1750	1900-2650	2800-4300	4600-up		
Art & Craft School	13	54	11	2	1	-	81	
North Bangkok Technical School (Thai German).	22	24	2	3	-	-	51	
Patumvan Mechanical Trade School.	19	62	9	8	2	-	100	
North Bangkok Mechanical Trade School	9	40	12	4	-	-	65	
Lopburi Mechanical Trade School.	13	17	-	1	-	-	31	
Nonburi " "	11	30	2	1	-	-	44	
Uthaintavai Building - Construction School.	10	59	15	9	1	-	94	
Dusit Building Construction School.	5	30	13	2	1	-	51	
Bangkok Tailoring School	5	20	3	4	1	-	33	
Bangkok Commercial School	5	32	26	32	2	-	97	
Dhonburi Commercial School	7	53	15	-	1	-	76	
Chetupon Commercial School	7	54	10	1	1	-	73	
Bopitpimuk Secretary Language School.	7	22	17	15	2	-	63	
Telecommunication School (Thai-Japan)	1	13	1	-	-	-	15	
Total ...	134	510	136	82	12	-	874	

VOCATIONAL EDUCATION - TABLE 23

Salary Levels of Vocational Teachers under the Division of Agriculture, 1962

Name of School	Range of Salary (in Baht per month)						Total	Remark
	450-750	800-1200	1300-1750	1900-2650	2800-4300	4600-up		
Chiengmai Agricultural College	9	18	7	7	2	-	43	
Bangpra " "	6	13	4	1	-	-	24	
Surin Agricultural School	8	18	7	3	1	-	37	
Nakonsrithamaraj " "	7	17	6	-	1	-	31	
Phranakorn " " Sriayuthaya	7	22	9	-	1	-	39	
Krasin " "	6	9	2	-	-	-	17	
Nan " "	8	10	4	1	-	-	23	
Burirum " "	10	11	1	1	-	-	23	
Nakonpathom " "	8	14	1	1	-	-	24	
Nakonrajsima " "	4	6	2	2	-	-	14	
Srisaket " "	9	5	3	-	-	-	17	
Songkla " "	6	5	2	-	-	-	13	
Pitsanulok " "	10	5	1	1	-	-	17	
Chaiyaphum " "	5	8	-	1	-	-	14	
Pathumthani " "	13	5	-	1	-	-	19	
Trang " "	14	3	1	-	-	-	18	
Cholburi " "	11	5	-	1	-	-	17	
Chumporn Short Course of Agriculture.	3	4	-	-	-	-	7	
Udornthani " " "	2	2	1	1	-	-	6	
Lopburi Farmer School	4	3	1	-	-	-	8	
Prachinburi Farmer School	6	-	1	-	-	-	7	
Total ...	156	183	53	21	5	-	418	

VOCATIONAL EDUCATION - TABLE 24

Salary Levels of Vocational School Teachers under the Division of Technical Institute, 1962

Name of Technical Institute	Range of Salary (in Baht per month)						Total
	450-750	800-1200	1300-1750	1900-2650	2800-4300	4600 up	
Bangkok Technical Institute	5	105	30	49	6	2	197
Thonburi Technical Institute	3	45	6	4	1	-	59
Teves Vocational Teacher Training	11	33	5	5	-	-	54
Thonburi Building Construction Ins.	4	7	4	3	-	-	18
Songkhla Technical Institute	8	47	5	7	1	-	68
Nakornrajsima Technical Institute	8	48	12	6	1	-	75
Chiengmai Technical Institute	6	58	4	2	-	-	70
Total	45	343	66	76	9	2	541

VOCATIONAL EDUCATION - TABLE 25

Salary Levels of Vocational Teachers under the Division of Vocational Promotion (Short Courses) - 1962

NAME OF SCHOOLS	RANGE OF SALARY						TOTAL
	450-750	800-1200	1300-1750	1900-2650	2800-4300	4600 up	
1. Sarapatchang (Wat Saket)	7	16	1	1	-	-	25
2. Wat Kaew Fa	9	9	4	1	-	-	23
3. Wat Thong Thamachat	6	9	1	1	-	-	17
4. Printing Center	2	1	-	-	-	-	3
5. Mobile Unit (South)	4	3	-	-	-	-	7
6. Mobile Unit (Northeast)	3	2	1	-	-	-	6
TOTAL	31	40	7	3	-	-	81

VOCATIONAL EDUCATION - TABLE 26

Comparison of Magnitude, Vocational Education, Between the Central Area and the Balance of the Kingdom, 1962, by Type of School, by Numbers of Schools, Teachers and Students

SCHOOL YEAR 1962 / VOCATIONAL SCHOOL TYPE	SCHOOLS					STUDENTS					TEACHERS				
	TOTAL	Central		Outlying		TOTAL	Central		Outlying		TOTAL	Central		Outlying	
		No.	%	No.	%		No.	%	No.	%		No.	%	No.	%
Technical Institute	5	2	40.0	3	60.0	6578	5091	77.4	1487	22.6	528	307	58.1	221	41.9
Thewes Teacher Training	1	1	100.0	-	-	277	277	100.0	-	-	31	31	100.0	-	-
Boys Trade	73	4	6.8	68	93.2	12120	592	4.9	11527	95.1	1533	89	5.8	1444	94.2
Girls Trade	73	5	6.8	68	93.2	10513	2432	23.1	8081	76.9	1167	262	22.4	905	77.6
Special	8	3	37.5	5	62.5	1603	1273	70.9	330	29.1	170	115	67.7	55	32.3
Agricultural	21	-	-	21	100.0	2908	-	-	2908	100.0	388	-	-	388	100.0
Industrial and Business	13	10	76.9	3	23.1	10534	9424	89.5	1110	10.5	854	775	90.7	79	9.3
Short-Course	5	4	80.0	1	20.0	3613	2393	66.2	1220	33.8	160	140	87.5	20	12.5
ALL SCHOOLS	198	29	14.6	169	85.4	48140	21476	44.6	26664	55.4	4831	1719	35.6	3112	64.4

Population (1960)	Number	%
Whole Kingdom	26,257,916	100.0
Central	1,703,346	6.5
Outlying	24,554,570	93.5

ROLE OF VOCATIONAL EDUCATION

List of Charts

CHART #

1 .... Organization Chart - Department of Vocational Education, Ministry of Education.

2 .... Educational Flow Chart - Planned Points of Interchange between Vocational and Academic Streams, and Planned Points of Termination in Vocational Stream.

3 .... Types of Vocational Education Schools, by Level of Instruction.

4 .... Enrollment Trends, by Vocational Level, 1958-1962.

5 .... Vocational Application - Admission Ratio Trends, by Level, 1960-1962.

6 .... Output Trends - Vocational Graduates, by Level, 1957-1962.

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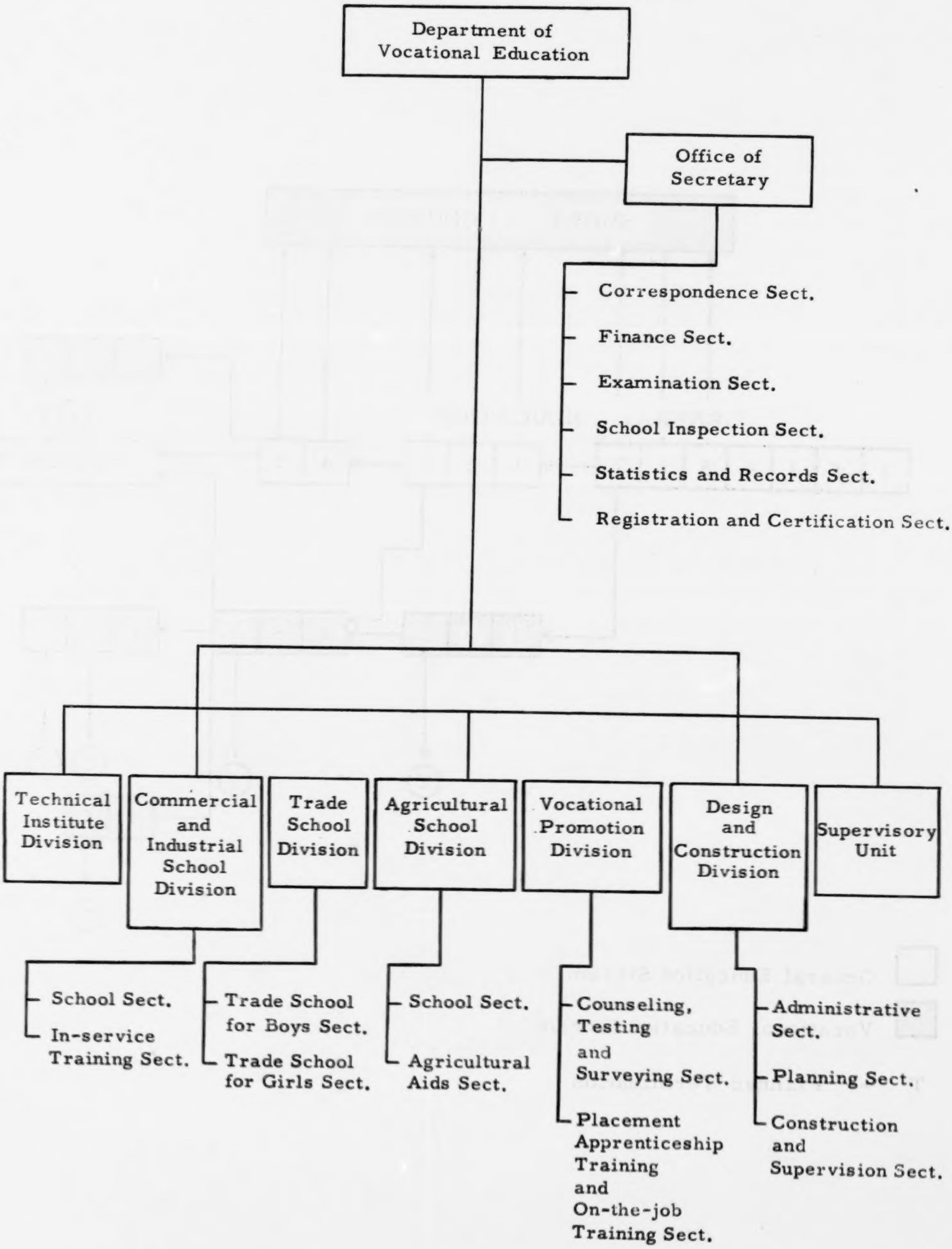
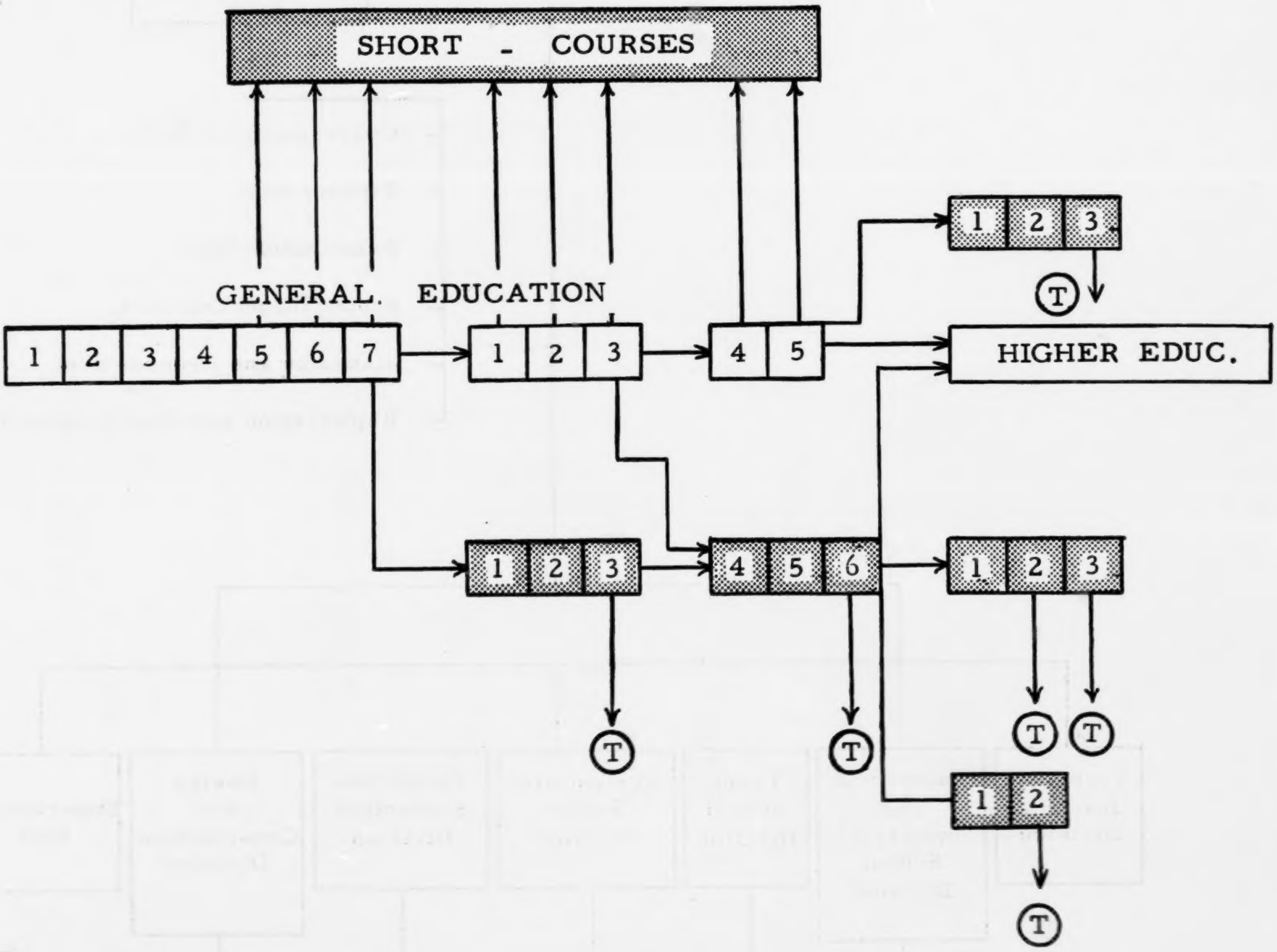
VOCATIONAL EDUCATION - CHART 1. Organization Chart
Department of Vocational Education
Ministry of Education


Department of Vocational Education
Office of Secretary
Correspondence Sect.
Finance Sect.
Examination Sect.
School Inspection Sect.
Statistics and Records Sect.
Registration and Certification Sect.
Technical Institute Division
Commercial and Industrial School Division
Trade School Division
Agricultural School Division
Vocational Promotion Division
Design and Construction Division
Supervisory Unit
School Sect.
In-service Training Sect.
Trade School for Boys Sect.
Trade School for Girls Sect.
School Sect.
Agricultural Aids Sect.
Counseling, Testing and Surveying Sect.
Placement Apprenticeship Training and On-the-job Training Sect.
Administrative Sect.
Planning Sect.
Construction and Supervision Sect.

VOCATIONAL EDUCATION - CHART 2. Educational Flow Chart Planned Points of Interchange between Vocational and Academic Streams, and Planned Points of Termination in Vocational Stream.

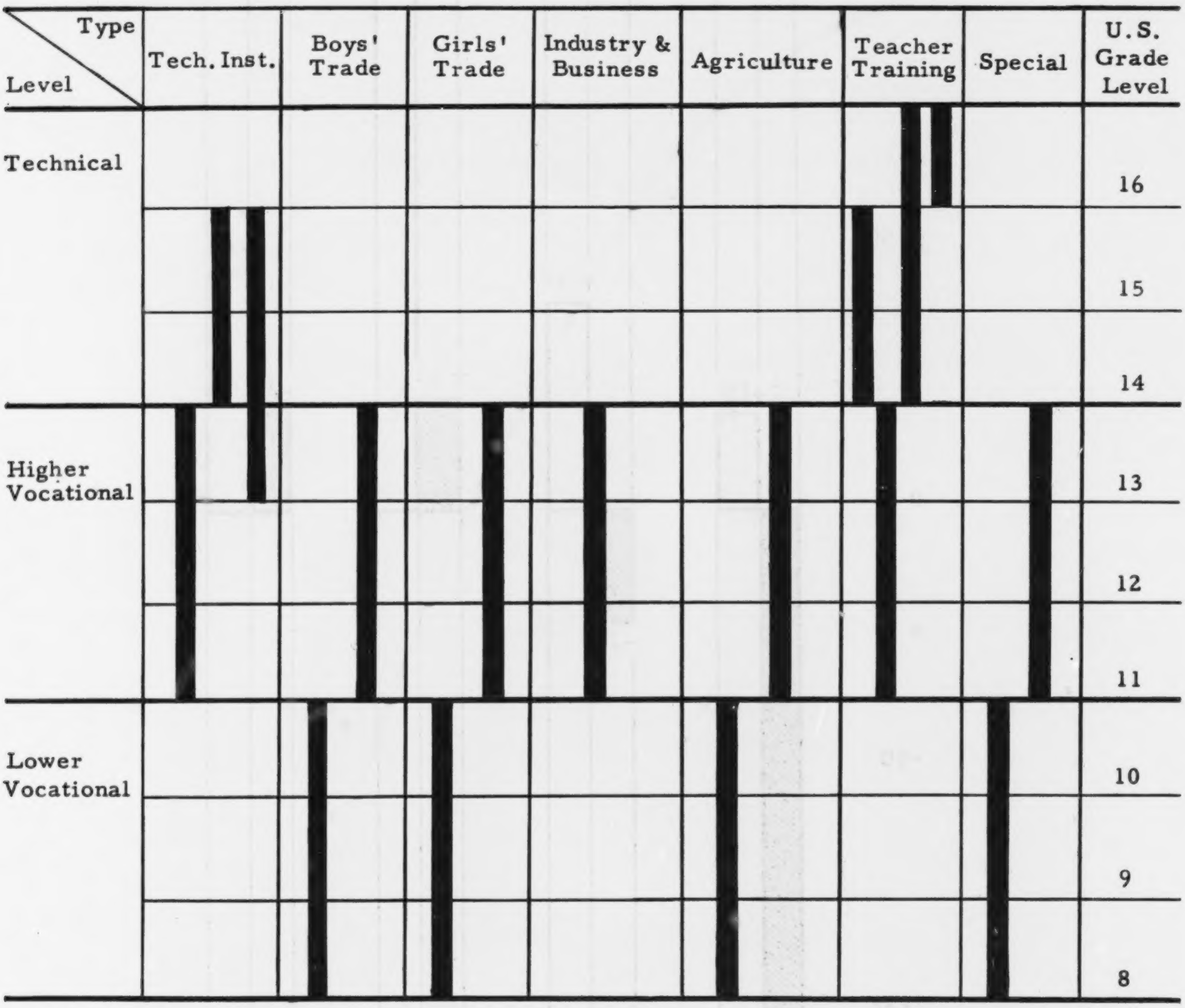


☐ General Education Stream

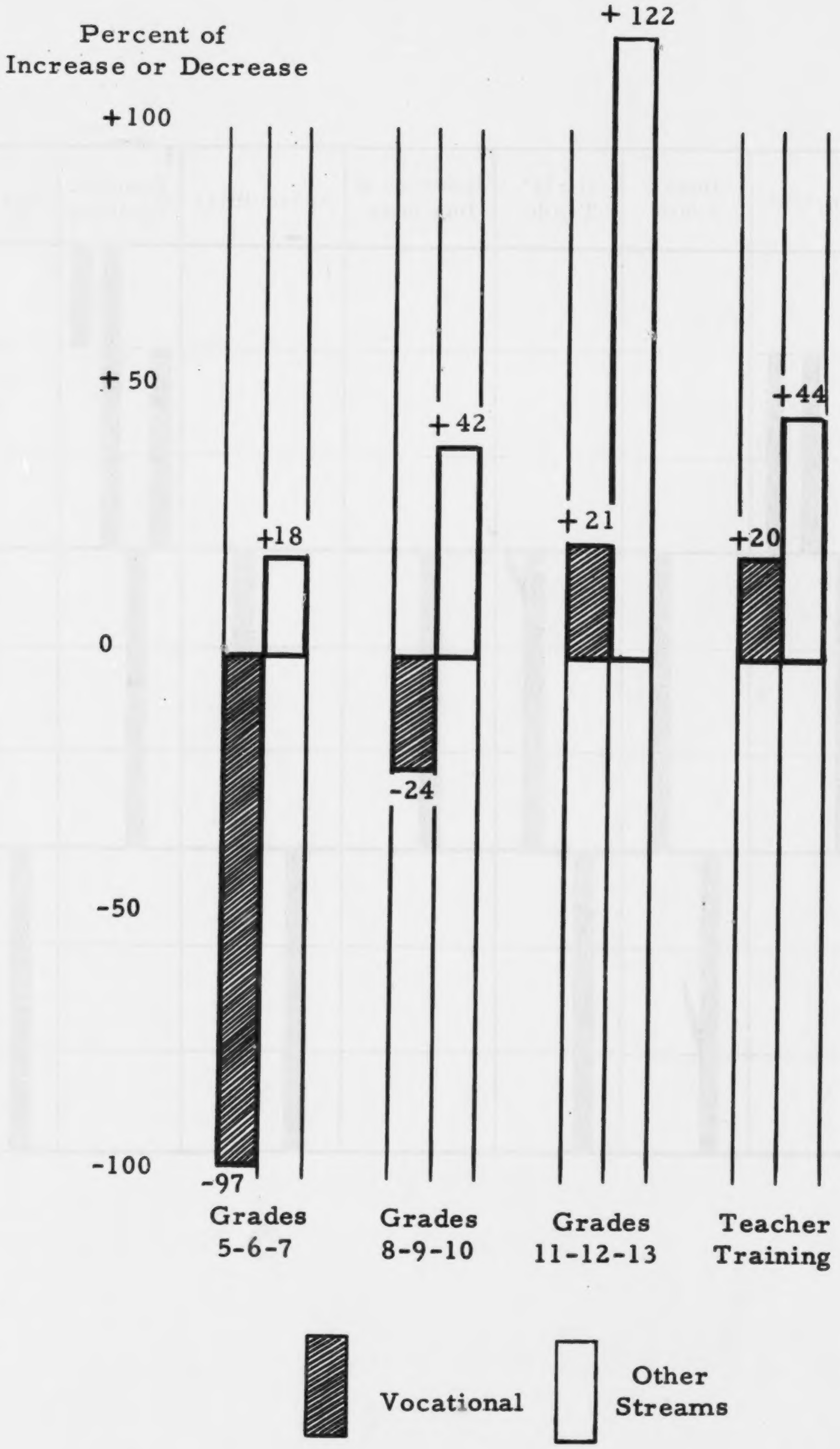
▨ Vocational Education Stream

T - Planned Termination

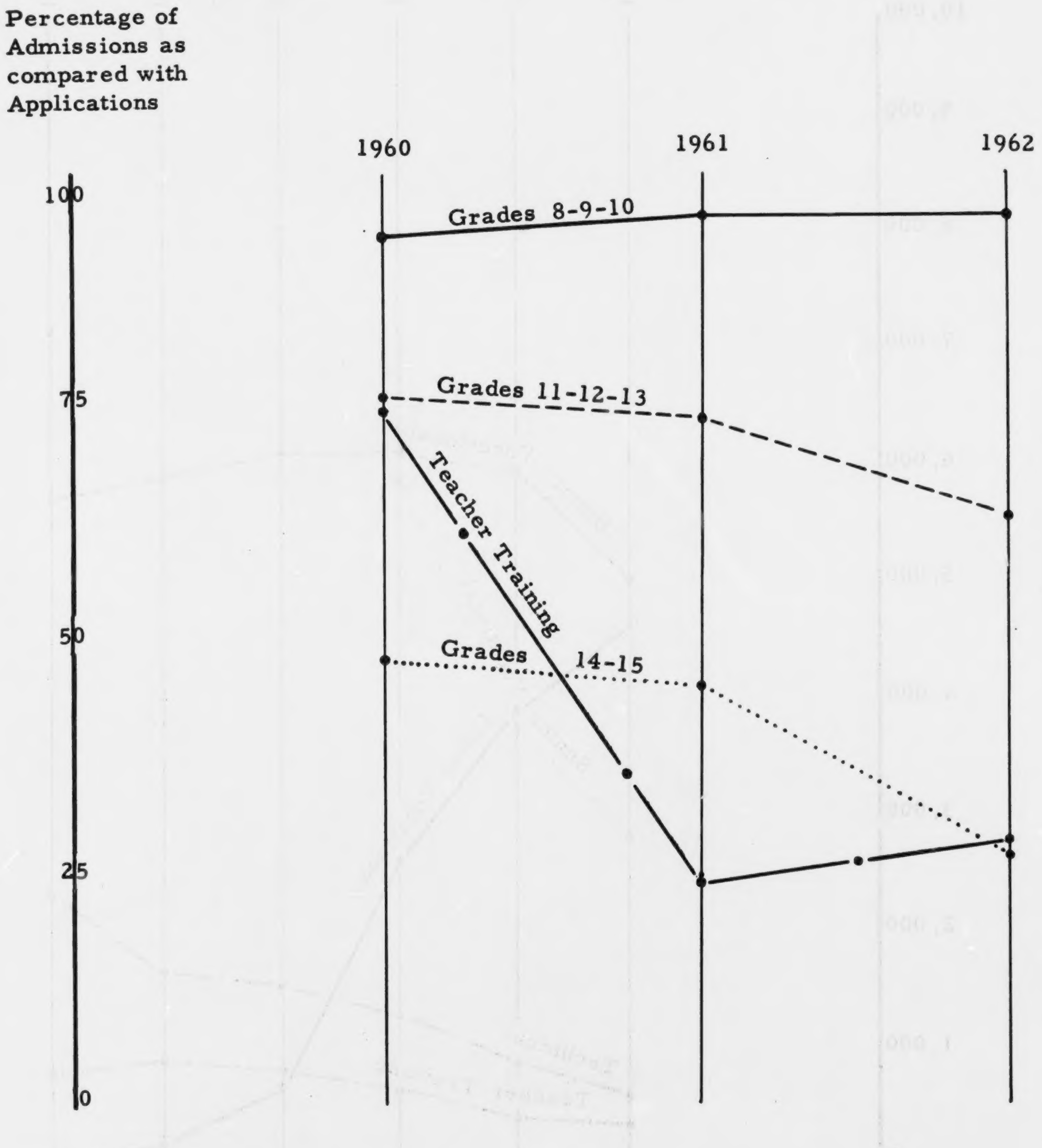
VOCATIONAL EDUCATION - CHART 3. Types of Vocational Education Schools, by Level of Instruction



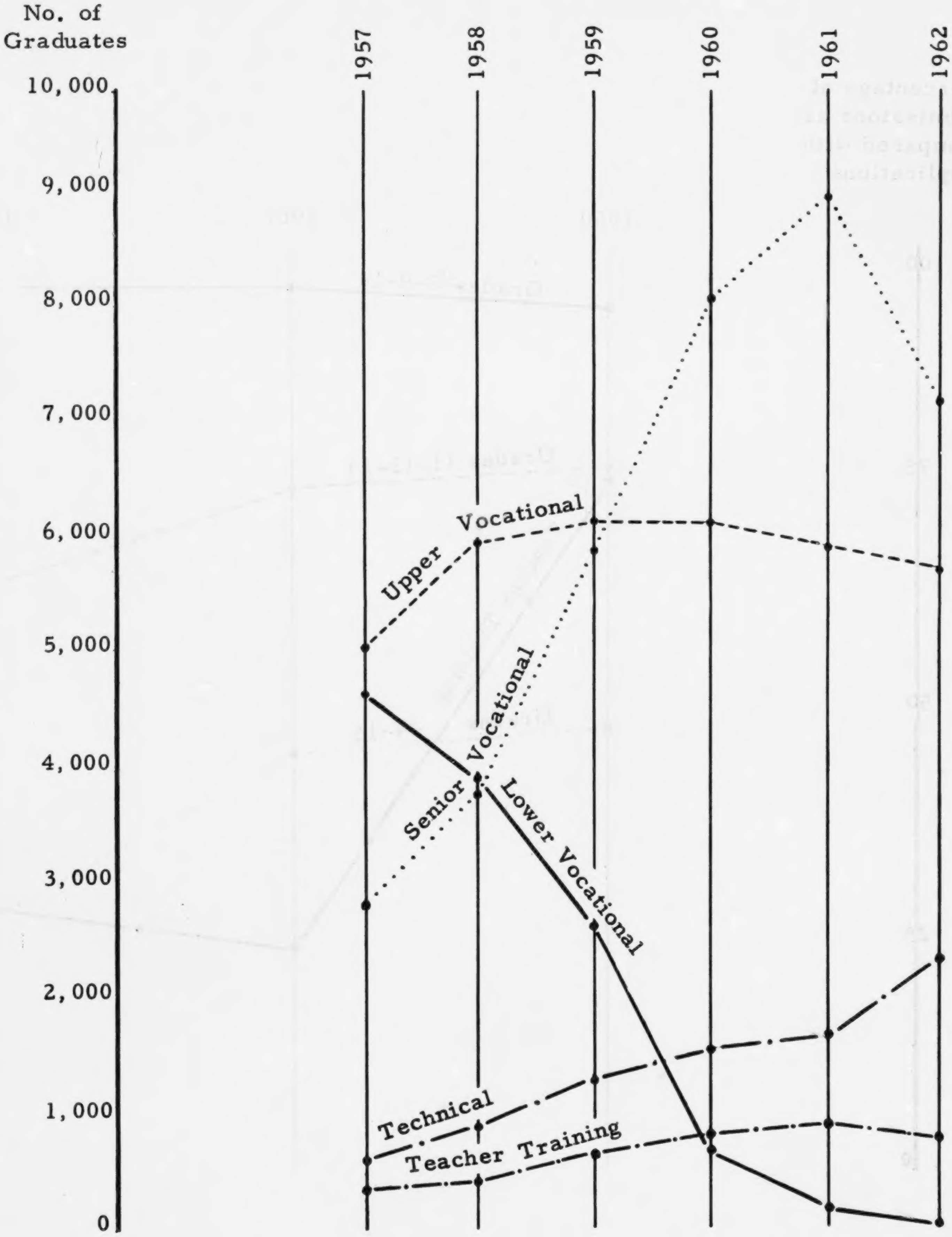
VOCATIONAL EDUCATION - CHART 4. Enrollment Trends, By Vocational Level between 1958-61 Compared with other Streams



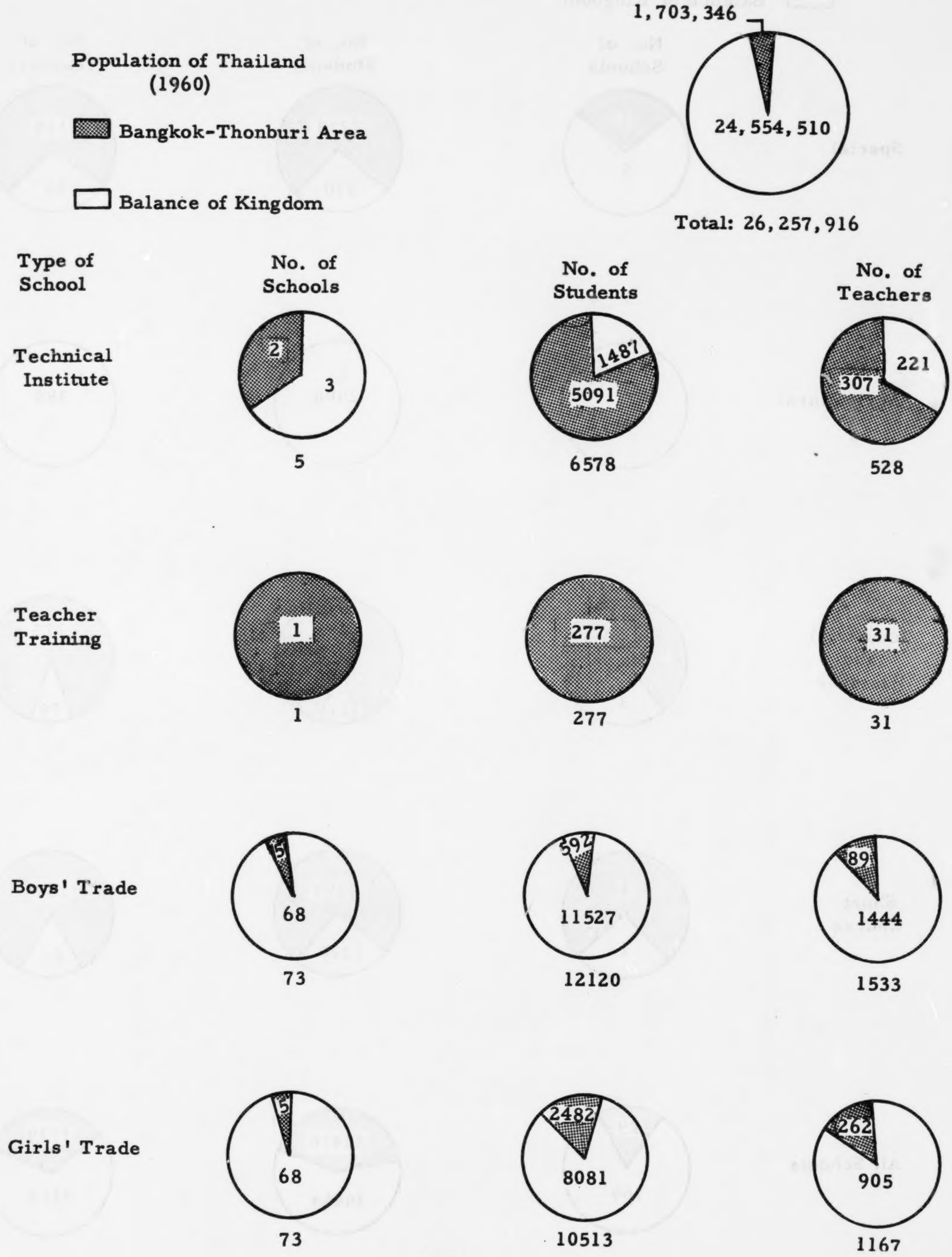
VOCATIONAL EDUCATION - CHART 5. Vocational Application Admission Ratio Trends, by Level, 1960-62



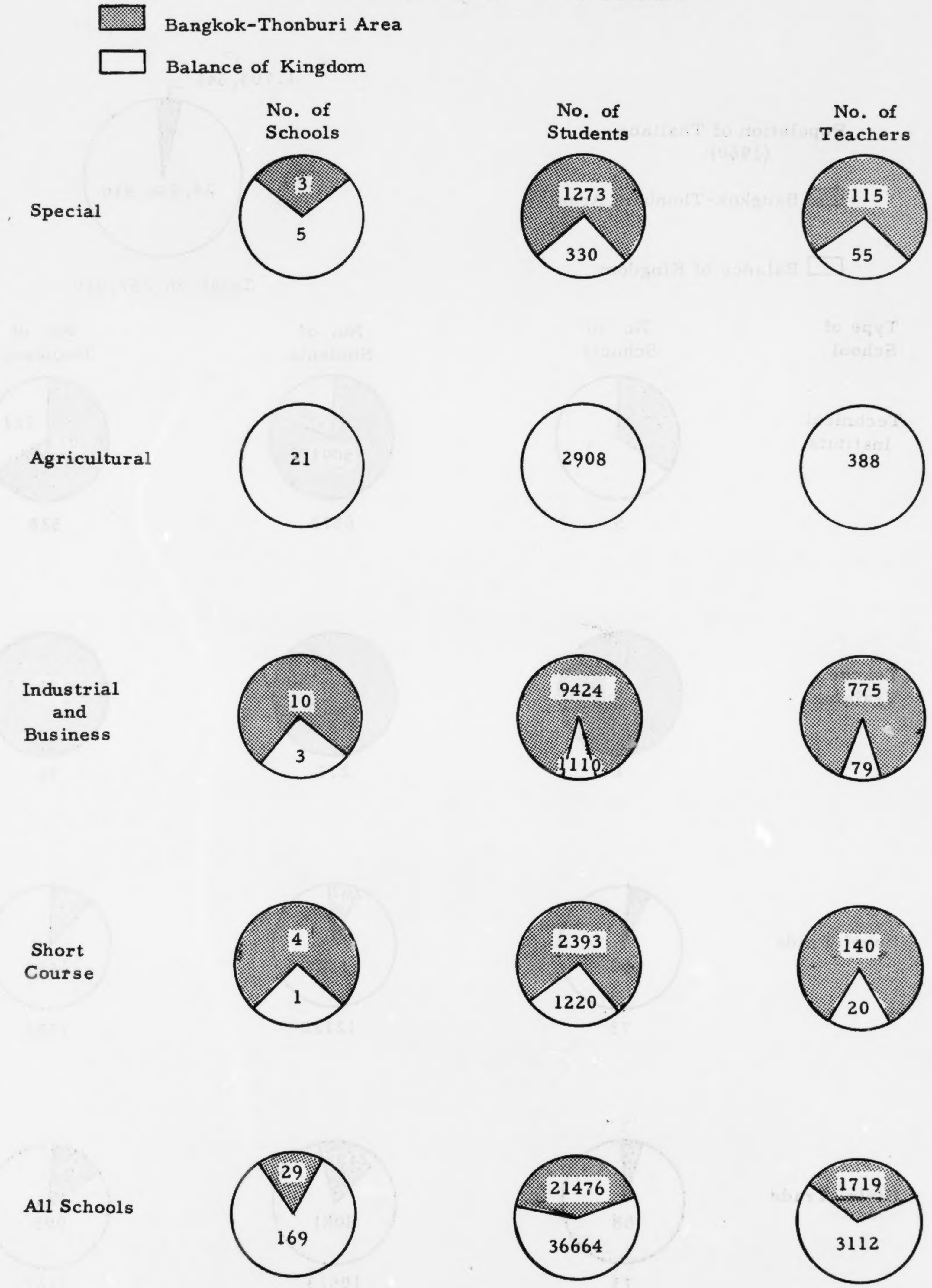
VOCATIONAL EDUCATION - CHART 6. Output Trends - Vocational Graduates, by Level, 1957-62



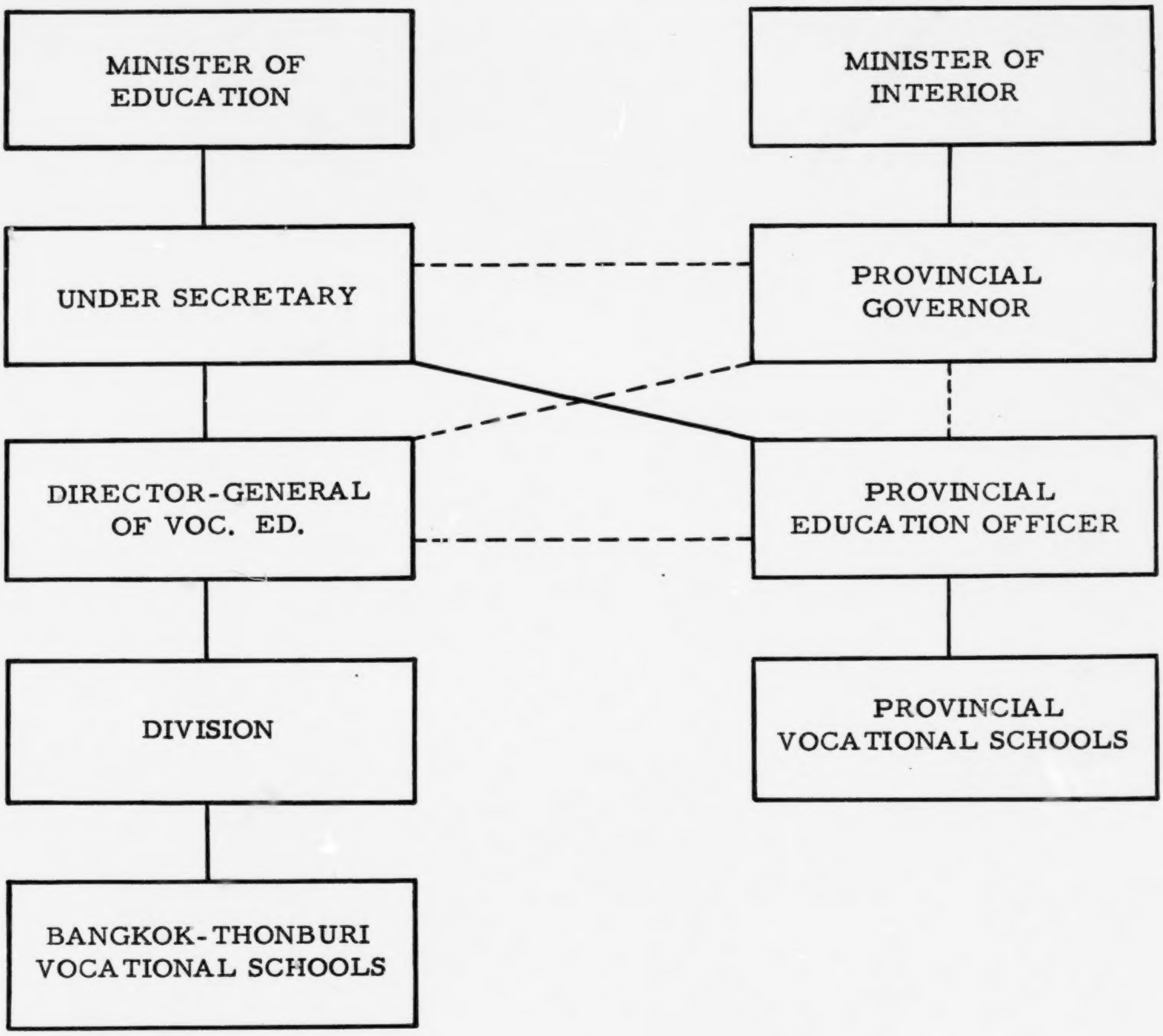
VOCATIONAL EDUCATION - CHART 7. Comparison of Vocational Education Activity in The Bangkok Area with the Balance of The Kingdom, 1962



(CONTINUATION OF CHART 7)



VOCATIONAL EDUCATION - CHART 8. Administrative Communications Channels


MINISTER OF EDUCATION
MINISTER OF INTERIOR
UNDER SECRETARY
PROVINCIAL GOVERNOR
DIRECTOR-GENERAL OF VOC. ED.
PROVINCIAL EDUCATION OFFICER
DIVISION
PROVINCIAL VOCATIONAL SCHOOLS
BANGKOK-THONBURI VOCATIONAL SCHOOLS

Solid lines represent official lines of authority

Dotted lines represent regularly used lines of communication and action

F

The Economics of Education

Dr. Chawal Paeratakul
Mr. Saiyud Champatong
Dr. Gordon K. Pierson
Mr. William J. Platt

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THE ECONOMICS OF EDUCATION

In recent years there has been an increasing interest in the economics of education and especially in the service which it could render to educational planners and policy makers. There is a growing interest in the economics of education in Thailand and its applications to Thai educational problems. For this reason it seemed to be appropriate to include a working paper on the economics of education in this study. The paper is divided into two parts. The first part describes the general parameters of the field, and the second part sets forth a practical application to an educational issue in Thailand.

General Considerations

The term "Economics of Education" has come into rather wide use in recent years as both economists and educators have kindled an interest in the subject. Until recently economists have had little to say about education, since the need for education has been defined largely in philosophical and sociological terms.

Now, a wealth of literature has appeared which discusses education as a form of investment. The knowledge and experience which a person acquires through the formal education system, as well as from on-the-job training, can be considered analagous to physical capital. Human capital, like physical capital, can be viewed as a form of wealth which can be combined with other factors of production to produce goods and services. The creation of both forms of capital involves an investment decision.

Just as a country needs additional physical facilities to sustain economic growth, a nation also must allocate a portion of its scarce resources to improving the level of education of its labor force. No country possesses unlimited resources, but for a nation such as Thailand, whose capital is particularly scarce, it is most important that resources are allocated to those sectors where they will contribute most to economic development.

Like all investment decisions, the problem is one of determining the optimum distribution of the available resources among competing demands. For example, NEDB, as an economic planning agency, must decide whether the country should increase its investment in highways, irrigation projects or other forms of physical capital. Or, should Thailand divert resources from such projects and invest more in human capital through the formal education system. Of equal importance, and of great concern to the Ministry of Education are questions like these: Should scarce resources be used to expand primary education; Or would the wisest policy be to increase the number of secondary school graduates? Unfortunately, the above questions are not answered easily. Yet, only if they are raised can a country begin to establish the proper set of investment priorities.

In addition to viewing education as investment, the economics of education includes other concepts. The concept of technology, for example, also is applicable to the educational process. It implies the use of methods, books, and buildings in such a way to optimize the quantity and quality of education. Is it possible to increase the output per unit of input? This is the question that should be asked. Because few large operations seldom operate at maximum efficiency,the answer very likely will be in the affirmative. An example of a possible "technological" change might be the use of programed instruction in the in-service teacher training programs, or perhaps the use of educational radio in some of the remote areas. The search for more efficient means of accomplishing the objective is never ending but fortunately requires only limited resources.

Other considerations also come to mind in viewing education from the standpoint of an economist. What is the demand on foreign exchange in expanding the system? What is the contribution of education to changes in productivity of physical capital? Further, the economist would ask the extent to which education contributes to economic development through its effect upon institutions, customs, and mores. The range of questions is far and wide but the answers at the moment are few. Yet, not until more persons particularly in ministries of education and economic planning agencies become interested will answer to these most important questions be forthcoming and translated into policy decisions.

The economics of education concerns itself with any number of issues and ideas, some of which have been mentioned above. However, this paper will concentrate first on the consideration of formal education as an investment, and the techniques which can assist in allocating funds between levels and kinds of education.

Perhaps the most useful information in this regard would be the comparable rate of return to investment in primary, secondary, and higher education.

The means of finding returns to an investment in physical capital are known to all of us, and while the computation of the returns to educational expenditures involves certain statistical and conceptual difficulties, there are techniques which will provide at least approximate returns.

For Thailand, the most appropriate technique for making the above comparison probably is to relate directly the cost of providing additional education to an individual to the increase in his lifetime earnings which he might expect as a result of further education. For example, to compute the return to additional baht investment in secondary education, it would be necessary to consider the cost of the staff and the numerous kinds of operational expenses (including depreciation) necessary to provide a student with a secondary education. In part these costs can be computed from Tables F-6 and F-9 included at the end of the section in this paper on educational finance. To this figure one must add the costs of books, and other personal expenses (not room and board), directly associated with schooling. Such costs, though not included in this document, could be made with a little research.

In addition, one must add the salary foregone by a student who is over 11 years old while attending school. The loss of the individual's income if he could be employed instead of attending school is a cost both to the individual and society as a whole, and hence must be considered as part of the investment cost. In a country such as Thailand, where a person enters the labor force at an early age, foregone wages may be a sizeable component of the total cost of a person's secondary education. To estimate it, one needs to know the average wage of persons in the labor force of secondary school age. While the census publications do not include income data, the Consumer Expenditure Survey recently published by NSO contains income estimates of various occupational classifications. Income is not related both to age groupings and educational attainments in the published edition, but NSO could make such information available if it were requested to do so. This data is only for the Bangkok-Thonburi area, but it still would be most useful.

Once the costs have been estimated it is necessary to determine the additional income associated with additional secondary education. That is, how much greater will be a person's income over his lifetime if he graduates from secondary school than if he attended only primary school.

To make this determination, one needs the average wage of persons classified by ages and by educational attainment, and, as mentioned above, it can be obtained from NSO. For example, the difference between the average wage of persons in age groups 16-20, 26-30, etc., who have completed primary as opposed to secondary school, would provide an estimate of the additional earnings an individual might expect over his lifetime if he received a secondary education. This income differential at various periods in one's economically productive life, can be amortized and, together with the cost figure previously estimated, will provide an estimate of the marginal rate of return to investment in secondary education.

Similar computations would permit comparable returns for primary, and higher levels of education. Further this technique could be used to evaluate the effectiveness of adult education programs, or vocational education. One could also gain insight into the quality of education from these procedures assuming that the superior educational background would be reflected, at least in part, in the wage profile. The wage differential between those with a U.S. degree and one earned in Thailand to some extent illustrates this issue. And, comparing this differential with the respective cost of obtaining the two degrees would be most helpful in considering the degree to which foreign study should supplement domestic educational facilities.

The available statistical evidence on such returns is very interesting. Annual returns to higher, secondary and primary education of approximately 9%, 12% and 35% respectively were computed for the U.S. using 1940 data. Computations for Venezuela and Chile suggest returns of perhaps 100% for primary education and considerably lower returns to the secondary and higher levels. One cannot assume that these estimates necessarily apply to Thailand. Yet, they would seem to indicate the desirability of making this kind of empirical study in Thailand as a means of clarifying the present debate about the future educational needs of this country.

At the moment, the best of information needed for such an examination is not available. While the above described technique is useful, it is not without limitation. For example, it is not possible to isolate the degree to which a person's higher income may be due to greater natural ability and intelligence. Thus, part of the return to education estimated above may be spurious. An additional problem is encountered when one attempts to allocate the portion of the cost of education which should be considered a consumption, as opposed to an investment, expenditure. Clearly, if in part one spends money for education as he would to buy a consumer durable good that is for future enjoyment or satisfaction, then that portion of the cost should be excluded from the value of investment. One could consider such an expenditure in the same manner as residential construction, and therefore, logically include it as an investment. However, then it would be necessary to add to the return, estimated above, an additional value representing the psychological satisfaction one receives from additional education. Unfortunately, it is not possible to measure such abstractions.

Despite these and other limitations this kind of study would be useful. Admittedly the margin of error may be rather high, but if the returns to primary education computed by this approach in Thailand should be comparable to the rough estimates of the Venezuelan and Chilean experience, one might assume this form of education should be emphasized at the expense of other forms. Conversely, of course, if the returns were very low or perhaps negative, universal primary education would not seem to be justified at least in purely economic terms.

PRACTICAL APPLICATIONS

The above investigation is one that will take some time to carry out. It can probably be done with reliability in Thailand only after some of the data necessary for estimating costs and returns are refined. Perhaps more immediate applications of certain economic concepts are possible, on narrower and more modest issues. In the following paragraphs we shall present one illustration of economic analysis in educational decision-making.

The issue we shall pose is that of in-service upgrading of underqualified primary school teachers in Thailand. We know this is a real issue here and one on which the Ministry of Education works continuously. In order to simplify our description of possible economic approaches to it, we shall make the methods by which it might be studied only hypothetical, and not try faithfully to reflect actual organization and instrumentalities in the Ministry.

We shall further put our stress on the particular insights or approaches the educational economist would bring to an issue of this kind. In doing so we want to emphasize that the economist can make his contributions only as a member of an integrated team of educator, educational administrator and economist. The economist must depend upon his fellow team members for what the economist calls "Knowledge of the technology" of the operation.

The first thing the team would do would be to state the possible objectives on the in-service training project. Perhaps this statement will be of the form of satisfactory accomplishment of teacher training curriculum "A" by 20% of the Kingdom's underqualified teachers. Another level of objectives might be set at 60% of the Kingdom's underqualified teachers. Still another level might be the satisfactory accomplishment of teacher training curricula "A", "B", and "C", for the two percentages of underqualified teachers.

The important concept here is that the objective or objectives must be set in measurable terms. Only thus can there be criteria for the objective comparison of alternative means of undertaking the operation.

Next the team would formulate two or more alternative means of accomplishing the objective, In this case we might oversimplify by identifying the following means:

1. Undertake the in-service training at existing expanded teacher training institutes.

2. Undertake the training by mobile units that will go to smaller municipal and rural centers and conduct part-time courses there.

3. Develop programed instruction materials by which teachers can individually acquire the knowledge on a self instructional basis.

(Elsewhere in this report we recommend a research project to test the feasibility of programed instruction for this application.)

In actuality good effort in in-service training would probably involve some combination of all three approaches, tailoring each to the conditions in which its use is advantageous. But in the interest of simplicity we shall treat them here as competing alternatives.

The next step is the gathering of costs that would be associated with each of the three approaches. Recurring costs should be distinguished from non-recurring because one approach might appear to be most expensive in total costs and yet the residual capital equipment it creates might continue to have value in this or other activities.

When the team starts to analyze the costs it will find that the financial data normally kept within the Ministry primarily for budgetary purposes is not of adequate detail to permit accurate cost estimates of the alternatives. Some of the shortcomings of these figures are covered elsewhere in our report. Suffice it to say here that unit costs (cost per teacher instructed) should be generated. Allowance should be made for materials used and a proper allocation should be made for equipment, facilities, and overhead. General overhead of the Ministry may be neglected unless one of the three alternatives is going to claim a disproportionate share of Ministerial management or facilities. In the costing, allowance should be made for the economics of scale, meaning the improved efficiency that may result from a larger volume of operations.

Care must be taken to gather all the costs that would be associated with meeting each of the designated levels of objectives. Only in this way are the competing approaches made comparable.

Another consideration in costing must be attention to scarce resources other than money. It may be that one alternative demands scarce foreign exchange, for example for trucks required by the proposal to send out mobile training units. Another of the proposals may be financially competitive but infeasible because it diverts an excessive share of scarce talent. For example the alternative of expanding teacher institutes might use such a large fraction of scarce faculty that production of new teachers would suffer unduly. Since economics is by one definition the science of dealing with scarcities, it can make contributions to the analysis and to the allocations that result from the analysis.

It is occasionally possible to use a "marginal" or "differential" costing approach in comparing alternatives. Here one neglects all costs common to the competing alternatives, looking only at those that would be uniquely added by the case at hand. This approach is often tricky. Better reliability is generally obtained by assessing total program cost of each alternative even though there will be redundant components among the competing alternatives.

Finally the team is equipped to array the three alternative means of upgrading teachers to the specified levels. One or nore of the alternatives may have had to be discarded along the way because it exceeded some constraint such as foreign exchange or scarce high level skills. Now, however, a choice can be made of the arrangement, or combination of arrangements, that is optimal by the cost-effectiveness test just outlined.

The work should not stop here. The program that is implemented should be designed around the analysis in such a way that time and money budgets for each item in the project are consistent with the cost analysis made by the team. Then a system of reporting should be set up in the operating agencies to check how well the actual performance conforms to budgets. No doubt some deviations will occur but if so they should be the subject of evaluation and of whatever corrective redirection of the project seems appropriate.

There is an often-used variation to the above method of comparing costs to meet a specified objective ("effectiveness"). It is to specify the budget (cost) first and then to compare all the alternatives according to which offers the greatest effectiveness. Here we would measure for a given budget of so many million baht, what fractions of under-qualified teachers could be upgraded under each of the alternative means.

The purpose of the above is to stress the concepts of economics in educational planning and analysis. No doubt many of these concepts are applied as a matter of routine now in the Ministry of Education. The illustration is made here to encourage the spread of these concepts so as to maximize the return from what are always scarce resources.

G

Educational Investments With Respect to Manpower Requirements

Dr. Thomas S. Turbyfill

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PART I

CURRENT INVESTMENTS IN EDUCATION

Ideally, the financial aspect of education should be considered as the last step of educational planning. Educational agencies should (1) devise a plan which would achieve the objectives of education for the nation; (2) determine the total financial resources needed for implementing the plan; and (3) arrange for obtaining these resources. However, in practice, the reverse is usually true. Despite the desirability of planning according to the ideal, historical evidence indicates that the maximum appropriation for education which can be expected by the governmental agency which controls the "purse strings" can be estimated fairly accurately. Consequently, planning most often begins with the potential limitation of financing available as the base from which to work, and then proceeds to relate this limit to objectives of the education plan.

In developing countries such as Thailand, it can be assumed that although there is a limitation on appropriations available for education, an increase of funds can be expected each year commensurate with the expansion of the economy. Given the desire for progress in education, this increase can be used in a number of ways. One is to continue the education system basically as it exists, but to increase student quantities. Another is to let the student population remain fairly static, and to improve student quality through improvement of teachers, facilities, instructional supplies and materials, etc. A third and obvious choice would be to do a little of each. A fourth alternative would be to choose specific levels or fields of education for improvement of quantity, quality, or both. Other alternatives are possible.

Regardless of which alternative is chosen, there are two basic methods of obtaining the additional financing required. One, as mentioned above, is to obtain more funds for education. The other is to release or "save" the needed funds through improvement of the efficiency and effectiveness of the school system; primarily by eliminating "wastage" at all levels. For maximum progress, both methods should be used to the fullest extent possible.

Several methods may be employed for increasing total funds available for education. The primary ones are (1) to obtain larger appropriations from the National Budget each year, (2) to obtain greater support from varied local and community sources, and (3) to obtain through grants or loans, financial assistance from external sources. Inasmuch as the first two methods are internally controlled, they should receive the greatest attention.

Increasing the efficiency and effectiveness of the education system is much more complex, involving all aspects and levels of education. Nevertheless, it is the most desirable means of effecting educational progress since it is the only way in which investment in education will achieve full potential returns, whether or not there is an increase in financial resources available to the schools.

Closely related to improvement of both quantity and quality in education through the use of school finance as a tool in educational planning is the economics of education. As discussed in the preceding chapter, the economics of education is concerned with education as an investment factor in economics growth, and education finance must act as a prime source of data to those who apply economic concepts to education.

NATIONAL INVESTMENT IN EDUCATION

National Budget for Education

Table 1 shows the gross amounts appropriated from the National Budget for education during the five year period, 1958-1962. The budget increased from ₿1,292.70 million in 1958 to ₿1,628.23 million in 1962, a total increase of ₿346.13 million. Gross increase of the Ministry of Education Budget was ₿266.6 million, or 22%, while that of the universities was ₿79.53, or 50%.

Education Budget-National Budget Ratios

Table 2 shows the gross amounts appropriated by the Government of Thailand for the National Budget and the budget of the Ministry of Education for the 5-year period, 1958-1962, and the ratios of the Ministry budget to the National Budget, expressed in per cents. The ratios range from a high of 21.26% in 1958 to 15.41% in 1962. Thus, for the five year period, there was a substantial decrease in the proportion of the total national budget going to education.

If the budgets for the universities are added to the Ministry budgets, these percentages would be changed only slightly. However, the ratios of university budgets to Ministry budgets changed significantly from 6.6% in 1958 to approximately 11% in 1962.

Table 3 gives the ratio (in per cent) of the education budget to the Gross National Product for the five year period, 1958-1962. During this period, education appears to have declined in relative importance.

EXPENDITURES BY THE MINISTRY OF EDUCATION

Ratios of Expenditures Among Departments in Ministry of Education

Table 4 presents the ratios (in per cent) of expenditures among departments in the Ministry of Education from 1958 to 1962. The ratio of expenditures by the Office of the Under-Secretary of State to total Ministry expenditures remained constant, and the Elementary and Adult Education Department ratio increased from 39.01 in 1958 to 64.77 in 1962.

During the same period, the percentage of the Ministry of Education budget going to the Secondary Education Department decreased from 26.16 to 15.72. In the Vocational Department, the percentage decreased from 12.55 to 7.48, and for the Teacher Training Department the ratio decreased from 11.10 to 4.24. These changes represent a dramatic change of emphasis in the Ministry of Education over the 5 year period, with elementary education as the focal point.

However, it should be noted that these changes came primarily in a one year period, between 1958 and 1959, and that there have not been any significant trends in the major departments since 1959. The abrupt change in that year was brought about through a major upward revision in teachers salaries. Since a vast majority of the total number of teachers in the school system are employed by the Department of Elementary and Adult Education, adjustments in salaries make the greatest impact in this department.

It should also be pointed out that these ratios cannot be interpreted literally as indices of relative total effort in education in Thailand. For example, whereas only a small portion of the total number of students in Thailand attend private elementary schools, more than half of the total secondary school student population attend private secondary schools, while vocational and teacher training students all attend government schools.

Of the total amounts appropriated to each Department, wide differences exist in the categories for which the funds are spent. 90% of the Elementary Department's budget goes into salaries while the Teacher Training Department expends only 63%, the Vocational Department 62%, and the Secondary Department 52% for this item. (See Table 6). Since elementary school buildings were built at the greatest rate, it is obvious that proportionally more funds must have been obtained from sources other than the Ministry budget for capital outlay, equipment, etc., than for other departments. However, even taking these variables into consideration, both the trend over the past several years and the present situation reveals clearly that major emphasis in the Ministry is on elementary education.

Ratios of Categories of Expenditures to Total Expenditures

Table 5 presents, by type of expenditures, the percentage of the total Ministry Budget from 1954 to 1962 (prior to 1959, the various categories were not detailed sufficiently to make a comparison). There was some increase in the percentage expended for salaries and wages for the 4 year period, a relatively substantial increase in percentage spent for sites and buildings, and a corresponding decrease in amounts expended for subsidies. Table 6 indicates the expenditures of each department by categories in 1962. Considerable variation is revealed in the individual departments in the amounts expended for specific categories. As expected, salaries constitute the major percentage of the budget in each major department. In the Elementary

Department, this item accounts for 90% of the total expenditures. Although in this department the percentage expended for sites and buildings is only 5.72, this is supplemented greatly by local communities and municipalities. Salaries and sites and buildings collectively account for approximately 96% of all funds expended by the elementary department. The percentage allocated to equipment (.62%) and materials and supplies (1.70%) are the smallest among the major departments.

In 1962, the ratio of operational to capital expenditures in the Ministry on a whole was 89.37 to 10.63 or approximately 9 to 1. Capital expenditures have gradually increased since 1959, and this trend is expected to continue. Considering the entire Ministry budget, this ratio is higher than would be expected, particularly as enrollments have steadily increased over the past decade, consequently requiring an expansion in sites, buildings, and equipment. However, in the absence of any information concerning the amount of capital expenditures from sources other than the Ministry budget, a valid comparison of operational and capital expenditures cannot be made.

Estimated Ratios of Public to Private Expenditures and Observable Trends

At the present time, there is little information concerning private expenditure for education for either private schools or local funds expended for public schools. Up until 1959, information on private investments in those schools which received government subsidies was collected, but since that date only limited information is available. Table 7 contains the ratios between government and private investments for government subsidized schools from 1955 to 1959. As can be seen, government subsidies gradually decreased both in ratio to private investments and to the Ministry budget. In the judgment of Ministry officials this trend has continued. However, due to the tightening of regulations under which private schools must operate and a general policy of the Ministry to discourage chartering of more private schools, investments in private schools is expected to level off while the government investments are expected to expand.

MINISTRY OF EDUCATION EXPENDITURES IN RELATION TO ENROLLMENTS

Average Pupil Expenditure by the Ministry of Education and Its Departments

The gross average expenditure per pupil by the Ministry of Education from 1958 to 1962 is shown in Table 8. The average increased from ฿298.95 in 1958 to ฿320.53 in 1962.

Considerable variation occurred in the expenditures per pupil between departments. These divergent trends for the five year period 1958-1962 are shown in Table 9. Since 1958 was a transitional year, a better analysis can be made by comparing 1959 with subsequent years.

As revealed in the table, average student expenditures decreased from 1959 to 1962 in both the Elementary and Teacher Training Departments. There was a steady decrease each year. (1961 was a 9-month fiscal year, thus for comparative purposes must be disregarded). Decrease in per pupil expenditure in the Teacher Training Department was approximately 20% while for the Elementary Department it was slightly over 5%.

In the other two departments, these expenditures increased. The Vocational Department per pupil expenditure grew from ฿1,424 to ฿2,355, a 70% increase from 1959 to 1962. The Secondary Department's per pupil expenditure increased from ฿964 to ฿1,364, or almost 45% during the same period. It should be noted that in these latter two departments, enrollments decreased during these same years, whereas budgets increased, while in the Teacher Training and Elementary Departments, enrollments increased along with increases in budgets.

EXPENDITURES BY THE UNIVERSITIES

National Budget for Higher Education

National budget appropriations to the universities for the years 1958-1964 appear in Table 10. Considerable variation occurs among the universities in budget increases during these years, both in gross amounts and percentage increases. Total budget increase for all universities collectively amounted to 181 per cent. The smallest percentage increase was at Chulalongkorn 108%, and the largest among the major universities was Thammasart 506%. The budget for the University of Medical Science was 184%, and for Kasetsart University 203%.

The largest budget among the universities is for the University of Medical Science. In fact, it is larger for every year of the seven year period than the budgets of all other universities combined. Although the gross amounts involved are smaller than in other universities, Silpakorn University had the greatest relative increase in budgets, a total of 950% from 1958-1964, indicating a major emphasis in the teaching of fine arts at the college level. The next smallest budget, that for Kasetsart University, is significant in view of the fact that approximately 90% of the population in Thailand is engaged in farming.

Average Per Pupil Expenditure in Universities

Table 11 shows the average per pupil expenditure in the universities for 1959 (the first year for which these data are available), and 1963. The table reveals that considerable variation exists among the universities, as well as the fact that per pupil costs at Kasetsart and Chulalongkorn Universities are comparable, and that per pupil cost for the University of Medical Science is much higher. The increase in per cent of per student expenditure over the first year period was exceptionally high at Silpakorn University in comparison with that of other universities.

It should be noted that at Thammasart University per pupil costs, taking the basis upon which they count students, increased 771.8%. By referring to Table 10, (National Budget for Higher Education), it can be seen that this university had an increase in gross budget of 506% from 1958 to 1964, indicating that the per pupil expenditure, figured on any basis, would be many times larger than any other university.

DATA REQUIREMENTS FOR ASSESSING INVESTMENTS IN EDUCATION

The preceding section on educational finance cannot be considered as an accurate assessment of current total investments in education in Thailand. An accurate assessment and projection of educational requirements in any country is dependent upon a detailed and thorough analysis and interpretation of complete data concerning the investments, structure, composition, and trends in the entire education system. The Thai-American Joint Task Force has been handicapped in its assessment of Thailand's human resource and educational requirements, and consequently of projecting educational goals and targets, by lack of complete data upon which to establish an accurate base from which to work.

Although there is considerable data currently available in Thailand, it is scattered, often fragmented, and requires too much time and effort to locate. In many instances the kinds of information needed are either missing or too tenuous to permit accurate interpretation. Data concerning the same sectors and levels of operation within the Ministries are often either different or conflicting, depending on the source, and not infrequently the same data is interpreted differently among several governmental agencies. Educational data within the departments of the Ministry of Education does not correspond with the same types of data in the Department of Educational Techniques, and often major differences occur between data used for accounting purposes at NEDB or the Budget Bureau and the corresponding data used by the Ministry and its departments. The same conflicts exist between and among other governmental agencies for other types of data.

Following is a summary list of financial data which is necessary for effective assessment of the present educational system and for planning future investments in educational programs in Thailand, but which are either missing or not detailed sufficiently to meet goal projection criteria. This is not intended to be an exhaustive list, but merely identifies the more obvious types of data needed.

Investments in Education

The total investment in education in Thailand is composed of:

1. Allocations from the National Budget.

2. Funds from local sources, such as donations, student tuition and fees, community or other contributions for land, buildings, equipment, supplies, etc.

3. Contributions at all levels by civic or secular organizations.

4. Investments, whether loans or grants, from external sources, such as international organizations, United Nations' agencies, regional organizations, foundations, foreign governments, and commercial organizations.

5. Investments in education by Ministries other than the Ministry of Education.

6. Investments by all private and "religious" schools.

Adequate information is available at the present time from only one of these sources, the National Budget. No accurate assessment of the total investment in education can be made until such time as investments from all of the other sources, and particularly investments in private schools, can be determined.

Financial Accounting

Much needed information concerning investments by categories of expenditures are needed, and such information should cover total investments. For planning and comparative purposes, these should be broken down into total and average per pupil expenditure for:

1. Instructional services.

2. Administration and supervision.

3. Capital outlay (land, buildings, and permanent equipment).

4. Supplies, materials, and expendable equipment.

5. Maintenance and repair (including salaries of maintenance personnel).

6. Auxiliary services.

All categories should be separated by levels and sectors of education. The only accurate information available at the present time is that pertaining to capital outlay expenditures from the Ministry of Education budget. It is not possible to make even a rough estimate of capital outlay which comes from local and other sources, which obviously constitutes a large proportion of total investments in this category. Also needed is the ratio of investment among all the above categories and among various levels and sectors of education.

Student Accounting

Due to the tenuous nature of much data pertaining to the student population, it is difficult to relate investments to the number of students in school. Student accounting needs to include:

1. Average daily attendance. (This is the best measure of teacher and classroom loads, and eliminates double accounting of students who move from school to school during the year.)

2. Average daily enrollment. (Total enrollment minus students who have moved, dropped out, etc.)

3. Teacher-pupil ratios based on the number of teachers actually teaching, and the number of pupils who actually attend school daily.

4. Classroom-pupil ratios based on average daily enrollment and average daily attendance.

5. Pupil drop-out rates.

6. Number and relative load of part-time students (particularly in the universities.

Teacher Accounting

Data concerning teachers needs to include by level and sector:

1. Number of teachers actually engaged in full-time teaching.

2. Number of teachers engaged in part-time teaching, with estimate of fractional full-time load.

3. Number of teachers teaching in double sessions.

4. Classroom-teacher ratios.

5. Maximum daily classroom-teacher utilization.

Requisite to effective planning is accurate data upon which to base the planning process. Thailand should seriously consider as a high priority the establishment of the organization, staff, and procedures needed to gather, compile, analyze, interpret, codify, and report detailed statistical information for the entire school system.

PART II

EDUCATIONAL PRIORITIES AND RESOURCE ALLOCATIONS

As has been previously defined, education has a two-fold purpose. One is to transmit to children and young people the great traditions of their culture, religion, and art; which serves primarily a non-economic function. The other is to help youth develop its talents and skills for employment; which serves an economic function, both for the individual and for societal economic development. Part II is based upon this latter function of education.

FUTURE MANPOWER DEMANDS

The Joint Thai-American Task Force has projected, under alternate assumptions, average annual demands for graduates from four levels of the Thai education system. These projections are based on demographic, economic, and economic-occupational demands for graduates from each level. In order to establish criteria for selection of educational priorities and resource allocations, the effects of alternate demands on the education system are examined in the following section.

Alternate Assumptions for Future Manpower Demands and Predicted Graduates at Different Levels of Education

The average demand for graduates from the 4th, 7th and 12th grades, and universities, based on alternate assumptions, are presented in the first columns of tables 12 through 17. Tables 12 and 15 (Demographic Demands) for 1963 and 1970 respectively, are based upon the assumption that Thailand would be employing in these years just as sophisticated a labor force, by sector or occupation, as was employed in 1960 in the same sectors or occupations. Table 13 is based upon the economic demand of 1963, with the assumption that educational attainment will remain constant. Tables 14 and 17 show the upgrading in educational attainment necessary if the economy is to improve according to assumptions of improved human capital. Table 16 shows the educational attainment needed for the whole Kingdom by 1970 to reach Bangkok-Thonburi levels of 1960.

The predicted graduates at each level for the years 1963 and 1970 are given in the second columns of each table, and the differences between demands and predicted graduates are given in the third columns. Thus, the third column indicates the relative changes in effort needed by the education system to bring graduates and demands into balance.

An examination of the tables reveals that the 1963 and 1970 demographic demands, with educational attainment held constant with 1960 levels, (tables 12 and 15) will be considerably exceeded at all levels according to predictions of graduates. In effect, this means that, considering only demographic demands, Thailand can continue 1960 trends in education, and by 1970 will be producing more graduates at every level than would be necessary to equal the educational attainment of the labor force as distributed in 1960.

For 1963 economic demands, both with educational attainment constant and educational attainment upgraded from 1960 levels, universities will produce more graduates than the demand requires, but at all other levels graduates will fall short of demands. This predicted situation is consistent with national educational policy for the years 1960-63, which placed emphasis on university education, and gave relatively greater increases in budget appropriations at this level during these years.

For the 1970 demographic demand (table 16), shortages occur between predicted graduates and demand at all levels except the 7th grade. Economic-occupational demands exceed predicted graduates for the same year at the secondary and university levels. Grade 4 demands are not included here since demand at this level is already exceeded at the present time. For the 1970 demographic demand, the greatest predicted relative shortage is at the university level, which is also true of the economic-occupational demand. In absolute numbers, the shortage is greatest at the secondary level in each case. For both demands, predicted shortages are significantly high at both levels.

Enrollments, Teachers, and Classrooms Needed to Meet Selected Manpower Demands

Since the demographic demand for 1970, with educational attainment constant with 1960 levels, would not provide for progressive economic development, only the effects on the education system of the other two demands will be examined under this heading.

Table 18 gives the enrollments needed at all levels of education in order to meet the demands for graduates in 1970, according to demographic demands based on upgrading the entire Kingdom by this year to Bangkok-Thonburi levels of 1960. The table also indicates the additional teachers and classrooms which will be needed to accommodate the increases in enrollment. The total increase in enrollment needed throughout the education system is 1,736,568. Required increases in enrollment in the Ministry of Education will be an additional 65,280 teachers over 1961 levels, and an additional 59,824 classrooms. Table 19 gives the same information for the economic-occupational upgraded demand in 1970. Required enrollments to meet the demand for graduates for this demand is somewhat lower than for the demographic demand, and consequently so are additional teacher and classroom requirements. Enrollment increase required is 1,370,109 students for the entire education system. The universities would require additional enrollments of 15,252 students, approximately double the present total university enrollments in Thailand. The Ministry of Education enrollments (including private schools) would need to be increased by 1,254,856 students, a 30% increase over 1961 ministry enrollments. Requirements for additional teachers and classrooms in the Ministry of Education are 42,149 and 45,027 respectively.

Estimates of Total Ministry of Education Costs Required to Meet 1970 Economic Demands

The 1970 demographic demand, with educational attainment upgraded to the Bangkok-Thonburi levels of 1960, is obviously beyond the capacity of the education system, particularly in higher education. Therefore, only the economic-occupational upgraded educational demand, with educational constant, will be examined under the above heading. Thus, by a process of elimination, this seems to become the most realistic 1970 educational target for Thailand.

Table 20 contains a computation of cost estimates for salaries of additional teachers and construction costs of additional classrooms needed to meet the economic-occupational demand in 1970. It should be noted that for the computation, an arbitrary figure of 3% is used to estimate the additional funds which will be needed each year to meet the normal increase in salaries due to increments for all Ministry of Education personnel, and that all costs other than for salaries and construction of classrooms are presumed to remain the same as in 1962. If it is assumed that the costs for classrooms which are normally obtained from local sources will approximately equal increases in costs in all other categories of expenditures by the Ministry of Education over the 9 year period, then the total costs for teachers salaries and classroom construction would represent the total increased expenditures needed by the Ministry of Education over the same period. As revealed by the table, the total increase in budget for teachers salaries in 1970 over the 1961 level is 629 million Baht, or an average recurring annual cost of some 79 million Baht. For classrooms, total cost is almost two and one-half billion Baht, or an approximate average yearly cost of 285 million Baht. Total average yearly cost for the two together (with added teacher salary costs recurring in subsequent years, while classroom costs do not) is over 629 million Baht yearly.

Table 21 shows the yearly Ministry of Education Budget which would be required to meet these additional costs over the 1962 budget level. The budget would increase from 1,468,400,000 Baht in 1962 to 2,453,233,000 Baht in 1970, for a total 9 year increase of 984,833,000 Baht. Below these costs are computed separately for secondary, elementary and higher education.

Estimates of Secondary Education Costs Required to Meet 1970 Economic Demand

Table 32 gives the increase in teachers and classrooms needed from 1962-1970, including estimates of costs, to meet the economic-occupational demand for secondary school graduates in 1970. Increases in costs required in other categories of expenditures for secondary education are not included. However, increased costs in the latter category could be met, at least to a substantial extent, by obtaining a portion of classroom construction costs from local or other sources and thus releasing funds from Ministry construction costs. As shown in the table the average yearly cost for additional teachers and classrooms would be approximately 26 million Baht.

Table 23 shows the annual budget increases and total yearly budget required for additional teachers and classrooms from 1962 to 1970, assuming that all costs other than teachers salaries and classroom construction remain constant. If the assumption is made that expenditures in other categories rise at the same rate as teachers salaries (based on 1962 ratios), and that construction costs are furnished entirely by the Ministry of Education, then the total budget for 1970 would be approximately 426 million Baht. (Other expenditures would increase by approximately 101 million Baht by 1970). This would represent the maximum budget required by the Ministry for secondary schools in 1970 in order to meet economic-occupational demands, and would be approximately double the 1962 budget for the academic secondary schools.

It should be pointed out that these cost data have been computed on the assumption that the increased demand for 12th grade graduates would all come from the academic stream. In actual practice, a sizable proportion of demand will probably be met from the vocational secondary schools, and consequently the Vocational Department would share in the increased costs in approximately the same ratio as upper vocational school graduates to graduate from the academic stream.

Estimates of Elementary Education Costs Required to Meet 1970 Economic Demand

By subtracting the average yearly increased costs of meeting the economic-occupational demand for secondary school graduates in 1970, ฿25,942,000 from the total average yearly costs of secondary and elementary graduates combined, ฿629,425,000, one can obtain the average yearly costs for planned elementary expansion by the Government of Thailand, ฿603,433,000. Since the economic-occupational demand for graduates at the 4th and 7th grade levels are practically being met at the present time, it would seem expedient for the Government of Thailand to shift the present emphasis or compulsory elementary education to the secondary level if the economic-occupational demands are to be met. Clearly, the country's resources are not sufficient to meet both.

Estimates of University Enrollments and Costs Required to Meet 1970 Economic Demand

Due to student accounting procedures at Thammasat University and lack of information from all universities concerning enrollments at each level (1st year, 2nd year, etc.), calculations for needed increases in university budgets for meeting the 1970 economic manpower demand had to be based on average ratios of enrollments to graduates. These estimated budgets are therefore only approximate. However, the predicted number of graduates for 1970 are probably more accurate than at other levels of education, and can be assumed to be quite close to the actual graduates for that year based on present firm plans.

Calculations reveal that if the universities continue on the present planned expanion program, graduates will fall 2,023 short of economic demands in 1970. To meet these economic demands will require an increase of 15,253 over presently expected enrollment, and would require increasing the predicted 1970 budget from 297 to approximately 530 million baht. This would represent a 108% increase over the announced fiscal 1964 budget of 254.49 million baht for all universities combined.

INTRA-LEVEL CONSIDERATIONS FOR ESTABLISHING PRIORITIES IN EDUCATIONAL DEVELOPMENT

In addition to the application of external criteria for determining priority targets in educational development, internal criteria should be considered also. The identification of priorities for investments in education should be undertaken only after an examination of the probable effects on capacity, quantity, efficiency, and productivity within each level of education in the event it is selected for achievement of a priority target. Some of these probable effects on education in Thailand at the elementary, secondary, and university levels are discussed in the following section.

Elementary Education

Thailand has announced a policy of embarking on a program of compulsory elementary education through grade 7, hopefully to be achieved by 1970, and by 1980 at the latest. A joint Ministry of Education-USOM Education Committee spent a period of approximately 6 months in 1962 working out the details and costs of reaching this goal by 1970. The yearly budget required (see page E-1 10, Proposed Projects for the Development of Education in Thailand, by Mom Luang Pin Malakul, September 1962) for this program by 1970 would be approximately 1.7 billion Baht, more than double the amount appropriated for elementary and adult education in 1960, and some 100 million Baht more than was appropriated for all education in Thailand, kindergarten through the university. This estimate was probably conservative since it did not take into consideration the decreasing pass rate trend in the elementary grades.

Although the Ministry of Education has taken initial steps for implementing this plan, it is obviously prohibitively expensive, and major problems have become evident in the first two years. There is also considerable question as to whether it is the best alternative for insuring long range educational progress.

At the time the policy was announced, more than 46 per cent of the elementary teachers had no teaching qualifications, a "pile-up" of failures and repeaters of major proportion existed in the first grade, and of serious proportion in the other primary grades, and textbooks, teaching materials and classrooms were in short supply. For these, and other reasons, considerable concern for the quality of the elementary program already existed in minds of many of the educators in the country. It is evident that a major expansion of elementary schools will adversely affect the quality of the elementary program which already shows signs of chronic problems, and increasing "wastage" in the schools.

This is particularly true in grade 1 where 58% of the teachers are unqualified, undoubtedly a major contributing factor in the almost 40% failure rate at this level. This condition, which has existed over a period of years, has resulted in some startling comparative statistics. The number of pupils who repeat prathom 1 (grade 1) each year exceeds the combined total number of students in all the secondary schools, vocational schools, teacher training colleges, and universities in the entire Kingdom. They require the services of more than 11,000 teachers, twice the yearly number of graduates from teacher training schools of the country. Although there has been a slight improvement in the pass rate over the past several years, unless it is greatly accelerated, a relatively efficient first grade cannot be achieved during this century. The ratio of qualified teachers to unqualified ones has also improved slightly during the same time period, but this trend is likely to be reversed if full compliance with the compulsory attendance policy is enforced.

The government of Thailand should seriously consider whether it would not be more feasible for long range development and planning to first concentrate on the improvement of quality in the elementary schools by improving instruction, raising the qualification of teachers, revising the examination system, and insuring an adequate supply of textbooks and teaching materials, before launching on a full-scale plan for expansion of elementary education. It is most doubtful that it can do both.

The improvement of quality would result in an improved flow of students through the first four grades, and consequently reduce to a normal level the "wastage" in the system due to failures and repeaters. To continue to project the present system on an expanded basis for the next decade or so without solving the problems causing "wastage" in the system will only compound the investments needed to keep the operation going. The situation could be compared to a man who has become so deeply in debt that such a large portion of his wages goes to paying interest on his debt, he is forced to go even deeper in debt in order to survive.

It has been estimated that the cost to the government of Thailand for teaching 1st. grade repeaters alone approaches 100 million Baht and requires the services of almost 12,000 teachers, 7,000 of whom are unqualified. Although the relative situation is not as severe in grades 2, 3, and 4, it is of serious proportions. Such a situation should not be allowed to continue.

This evidence suggests that for the next several years attention in elementary education be focused on the improvement of quality in the four primary grades, within the present ratio of appropriations by the Government for elementary education, and that enforcement of compulsory education through grade 7 be postponed until such time as a reasonable flow of students through grade 4 be achieved. On a long range basis, this plan will require less investment in elementary education, and insure higher quality of education at all elementary levels when the 7 year compulsory education policy is subsequently implemented. Figuratively, the elementary system would thus "get out of debt" before embarking on a plan of major expansion.

Since economic-occupational needs for 1970 are in the neighborhood of 800,000 graduates from grade 4, and 207,920 graduates from grade 7, the natural increase of students will approximately meet these needs without resorting to immediate expansion of the compulsory system.

Secondary Education

To achieve student production levels needed to meet economic demands in secondary education, the secondary schools will have to approximately quadruple output in grade 12 by 1970. However, in absolute numbers, this is only 15% of the output expected from grade 7, and 6% of the output expected from grade 4 in the same year.

An examination of the secondary education system currently reveals that it is in a relatively good position to achieve this goal. Since 1960, grades 5, 6 and 7 have been transferred from the Secondary Department to the Elementary Department. Collectively, these three grades enrolled 58% of the total secondary students before the transfer was initiated.

If the inter-grade attrition rate were decreased to the level of 10% per year, the secondary schools could graduate from grade 12 the 59,861 students needed in 1970 to meet the economic-occupation demand without increasing present enrollment in grade 8 (93,790 in 1961) in the academic stream alone. When the expected output from secondary vocational schools in 1970 is added to this assumed improvement of attrition, total secondary graduates considerably exceeds economic-occupational demands.

Consequently, the major obstruction to achieving the 1970 economic-occupational goals for 12 grade graduates is budget allocations sufficient to meet the costs for additional teachers, and classrooms.

Since economic-occupational demands for 1970 reveal a need for relatively large expansion of secondary education and inasmuch as the increased budget required to achieve this expansion is relatively small in relation to the total Ministry of Education budget it would seem that this level of education should receive major consideration for achievement of economic-occupational demands.

Higher Education

For the past several years there has been increased emphasis on higher education in Thailand, resulting in large increases in budget appropriations for older universities, and the establishment of new ones at Chiengmai and Khonkaen. Consequently, the universities are in a favorable position to increase enrollments to the extent needed to meet economic-occupation demands for 1970. Increasing the number of graduates to meet economic-occupational demands beyond the level now planned for 1970 would require an increase of 70% in actual enrollment over the planned enrollment for that date. Since availability of "high level" manpower is considered to be the most important requisite to economic development, this high priority target should be carefully considered. The additional budget required for expansion sufficient to meet economic demands of 1970 is not large when related to the total educational budget for Thailand.

The development of qualified teachers, and not student enrollments, represents the major problem in meeting the expansion requirements, and emphasis should be in areas of greatest need. Based upon supply and demand of graduates at the present time, shortages seem to exist in engineering, agricultural, medicine, and highly technically skilled areas. However, a careful study should be made to determine the extent to which "supply and demand" on an "open market" basis is consistent with the actual needs for economic development, before selective expansions of educational program are planned. First priority should be given to economic needs.

STRATEGIES FOR FINANCIAL PLANNING

The final selection of priorities for investment in education is not an easy task, and depends upon many variables, the most important of which is the resources available for investment in education. Furthermore, education is only one of many sectors in the economy which must be considered in the allocation of total material resources. In theory, all sectors should advance in coordination.

Projected plans for total country economic development, based upon the most valid of assumption, are subject to uncontrollable factors which may appear in the future. In determining priorities for investment among the various sectors, or within the education sector, attention should be given to probable effects on implementation of planned goals under various conditions. The following discussion of selection of priorities for educational investments is based upon the financial assumptions indicated.

The first assumption is that there will be increased investments in education above the present levels, but that these increased investments will be limited to approximately 10% per year. If normal increase in costs of continuing the present system at all levels as it now exists, from best estimates approximately 5%, is subtracted from this increased investment, then only 5% is left for expansion. Based upon the 1962 budget for the total educational system, approximately 1.7 billion Baht, 85 million Baht would thus be available for expansion of some sector of education. This is approximately the amount which would be needed annually to expand university and technical education in order to meet the economic demands for 1970, with educational attainment held constant in the labour force. It exceeds what would be needed to meet the economic demand for graduates in secondary education, and is less than 20% of the amount needed to achieve compulsory elementary through grade 7 during the same period of time. Consequently, a practical course would be to give first priority to a goal which can be potentially reached, the economic goal for higher education. This is particularly applicable since this goal should receive high priority under any development plans.

Even assuming that higher education were to absorb most of the increased investment in education in Thailand, some expansion could be achieved in secondary schools, both academic and vocational, and elementary schools through concentrating on improving efficiency in these systems.

Assuming a 15% yearly increase in total investment in education, with 5% of this needed to continue the present system as it now is, then 170 million Baht would be available for expansion programs. This is approximately the amount needed to meet expansion cost estimates for higher education, technical education, secondary education, and an expansion of teacher training schools sufficient to provide the additional teachers needed for secondary school expansion. It is only 42% of the amount needed for expansion of compulsory elementary education by 1970.

Following the same assumption, a 20% yearly increase would allow for meeting economic demand in universities, technical schools, secondary schools, and 64% of compulsory education expansion. A 25 per cent budget increase yearly would provide for all other expansion, and 86% of compulsory education goals; or for full compulsory education by 1970 provided no expansion is made at any other level.

To provide for economic demands at all levels and expansion of compulsory education by 1970 would require a 30 per cent yearly increase in the total education budget; or a total educational budget in 1970 of over 4.1 billion baht.

Two basic alternatives are possible, assuming some relative increase in investments in education short of the total needed for achieving all goals. One is to select projects by priority, and implement expansion program as funds permit, beginning with the first priority. The other is to spread increased investment among all levels, and only partially achieve the goals of each. Over the large haul, it would be most logical to concentrate on the goal which will contribute most to economic development, thereby insuring that in further years the economy will continue to expand at a progressive rate. Thailand would thus advance to a more favorable financial position from which to channel increased investments into its education system, and to ultimately meet economic and social demands at all levels of education.

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EDUCATIONAL INVESTMENTS

TABLE 1

National Budget for Education in Thailand - 1958-1962

YEAR	Ministry of Education	Universities	Total
1958	1,201.8	80.90	1,282.70
1959	1,267.7	125.36	1,393.06
1960	1,236.4	120.98	1,357.38
1961	1,026.6	111.85	1,138.05
1962	1,468.4	160.43	1,628.83

TABLE 2

Budget of Ministry of Education As Percentage of The National Budget 1957-1962

YEAR	NATIONAL BUDGET	BUDGET OF MINISTRY OF EDUCATION	PER CENT OF NATIONAL BUDGET
2500 (1957)	5,059,990,082	904,352,355	17.83
2501 (1958)	5,651,619,393	1,201,794,658	21.26
2502 (1959)	7,186,640,000	1,267,742,943	17.64
2503 (1960	7,700,000,000	1,236,365,471	16.05
2504 (1961)	6,660,000,000	1,026,155,910	15.41
2505 (1962)	8,880,000,000	1,468,425,000	16.54

EDUCATIONAL INVESTMENTS

TABLE 3

Per Cent of Gross National Product Invested In Education 1958-1962 (In Millions)

Year	Budget of Ministry of Education	Budget of Universities	Total Budget for Education	G.N.P.	% of Education Budget to G.N.P.
1958	1,201.8	80.9	1,282.7	37,109.0	3.03
1959	1,267.7	125.4	1,393.1	40,909.2	2.98
1960	1,236.4	121.0	1,357.4	46,335.5	2.56
1961	1,026.2*	111.9*	1,138.1*	50,026.0	1.99*
1962	1,468.4	160.4	1,628.8	53,671.8	2.65

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* These figures are not comparative since they represent only a 9-month fiscal year, whereas the G.N.P. is for a full year.

EDUCATIONAL INVESTMENTS

TABLE 4

Per Cent of Total Ministry Budget Distributed To Departments

Year	Total Ministry Budget	Office of Under-Secy.	Teacher Education.	Religious Affairs	Physical Education	Educational Tech.	Secondary Education	Fine Arts	Primary and Adult Ed.	Vocational Education.
1958	100	4.85	11.10	4.20	0.63	0.10	26.16	1.40	39.01	12.55
1959	100	4.86	5.22	1.12	0.82	0.19	15.37	0.72	64.20	7.49
1960	100	4.08	4.81	0.89	0.47	0.14	15.08	0.74	66.50	7.28
1961	100	5.43	4.59	0.87	0.79	0.16	15.00	1.55	64.81	6.80
1962	100	4.39	4.24	0.77	1.14	0.16	15.72	1.33	64.77	7.48

EDUCATIONAL INVESTMENTS

TABLE 5

Budget of Ministry of Education, by Type of Expenditure in Percentage to the Total Budget Received, 1954-1962

YEAR	TOTAL	SALARIES AND WAGES	ORDINARY EXPENSES	EXTRA EXPENSES	MATERIAL	EDUCATIONAL EQUIPMENT	PROPERTY	SUBSIDY	VARIOUS PROJECTS	SITES AND BUILDINGS	OTHER EXPENSES	REMUNERATION
1954	100.00	22.25	34.60	43.15	-	-	-	-	-	-	-	-
1955	100.00	30.73	39.97	31.30	-	-	-	-	-	-	-	-
1956	100.00	28.06	42.59	29.35	-	-	-	-	-	-	-	-
1957	100.00	28.21	44.61	27.18	-	-	-	-	-	-	-	-
1958	100.00	21.42	36.15	42.43	-	-	-	-	-	-	-	-
1959	100.00	73.71	1.82	-	0.42	0.46	7.92	12.47	3.09	-	0.11	-
1960	100.00	83.39	1.70	-	1.98	0.61	-	7.63	-	4.60	0.09	-
1961	100.00	76.45	1.66	-	1.58	0.70	-	6.38	-	8.69	1.90	2.54
1962	100.00	77.09	1.71	-	1.65	1.08	-	6.23	-	9.56	0.37	2.31

EDUCATIONAL INVESTMENTS

TABLE 6

Expenditure of Each Department by Categories in 1962

DESCRIPTION	OFFICE OF UNDER SECY.		TCHR.TRNG. DEPT.		REL.AFFRS. DEPT.		ED.TECH. DEPT.		SECN. ED. DEPT.		FINE ARTS DEPT.		ELEM. ED. DEPT.		VOC. ED. DEPT.		PHYSICAL ED. DEPT.		TOTAL	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
	64.4	4.39	62.24	4.24	11.28	0.77	2.43	0.16	230.94	15.73	19.57	1.13	950.77	64.75	109.98	7.49	16.72	1.14	1468.40	100
Salaries	31.38	48.72	39.58	63.63	1.16	10.28	1.41	57.71	121.91	52.77	7.85	40.11	856.69	90.10	68.9	62.65	3.19	19.10	1132.1	77.10
Remuneration	2.74	4.25	1.94	3.11	.13	1.15	.08	3.33	15.04	6.51	.66	3.37	6.64	0.70	6.55	5.94	.13	0.77	33.9	2.31
Ordinary Expenses	7.35	11.41	2.54	4.04	.42	3.72	.69	28.55	2.14	0.94	.72	3.68	8.94	0.94	1.77	1.62	.51	3.00	25.1	1.72
Materials & Supplies	1.40	2.17	1.78	2.86	.58	5.14	.25	10.41	.91	0.39	.54	2.76	16.35	1.70	2.08	1.89	.28	1.67	24.2	1.65
Equipment	.33	0.51	1.06	1.70	.01	0.09	-	-	1.00	0.43	.27	1.38	5.68	0.62	7.17	6.52	.33	1.94	15.9	1.08
Sites & Bldgs.	15.24	23.60	9.20	14.79	-	-	-	-	27.02	11.72	9.22	47.12	54.35	5.72	16.11	14.65	9.21	55.14	140.3	9.55
Subsidy	2.02	3.13	6.14	9.87	8.98	79.62	-	-	62.92	27.24	.31	1.58	2.12	0.22	7.40	6.73	1.57	9.40	91.4	6.22
Misc.	4.00	6.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.50	8.98	5.5	0.37
		100.		100.		100.		100.		100.		100.		100.		100.		100.		100.

EDUCATIONAL INVESTMENTS

T A B L E 7

Public and Private Investments in Education

(in Baht)

Y E A R	No. Private (a)	No. Government's Subsidy	No. Total (b)	Public (Government) (c)	Public-Private Investment Ratios	
					c/a	c/b
1955 (2498)	81,854,701	33,848,498	115,703,199	827,756,911	10 : 1	7 : 1
1956 (2499)	122,045,430	41,180,432	163,225,862	872,038,912	7 : 1	5 : 1
1957 (2500)	111,234,477	55,057,884	166,292,361	904,352,355	8 : 1	5 : 1
1958 (2501)	106,909,739	57,600,046	164,509,785	1,201,794,658	11 : 1	8 : 1
1959 (2502)	102,924,130	56,089,384	159,013,514	1,267,742,943	12 : 1	8 : 1

EDUCATIONAL INVESTMENTS

TABLE 8

Per Pupil Expenditure, 1958-1962

YEAR	TOTAL EXPENDITURE	NUMBER OF STUDENTS	AVERAGE PER PUPIL EXPENDITURE
1958	1,207,946,058	4,040,609	298.95
1959	1,273,742,943	4,167,888	305.61
1960	1,242,693,471	4,355,118	285.34
1961	1,026,155,910	4,550,174	225.08 *
1962	1,470,425,000	4,587,450	320.53

* Represents 9 month fiscal year.

EDUCATIONAL INVESTMENTS

T A B L E 9

Per Pupil Expenditures, by Departments 1958-1962

	ELEMENTARY AND ADULT DEPARTMENT			SECONDARY DEPARTMENT			VOCATIONAL DEPARTMENT			TEACHER TRAINING DEPARTMENT		
YEAR	Budget (Millions)	Enrollment (Millions)	Per Pupil Expenditure (Baht)	Budget (Millions)	Enrollment (Thousands)	Per Pupil Expenditure (Baht)	Budget (Millions)	Enrollment (Thousands)	Per Pupil Expenditure (Baht)	Budget (Millions)	Enrollment (Thousands)	Per Pupil Expenditure (Baht)
1958	172.76	3.17	54	115.87	180.9	641	55.59	63.9	870	49.15	16.4	2,997
1959	813.91	3.23	251	194.84	202.1	964	94.97	66.7	1,424	66.23	19.1	3,468
1960	822.24	3.36	244	186.46	210.1	887	89.99	64.2	1,402	59.53	20.6	2,890
1961	665.08	3.54	188	153.95	189.0	815	69.77	54.3	1,285	47.09	19.3	2,440
1962	856.69	3.60	238	230.94	168.8	1,368	109.98	46.7	2,355	62.24	22.3	2,791

EDUCATIONAL INVESTMENTS

TABLE 10

National Budget for Higher Education by University in Thailand During the Budget Year 1958-1964 (in millions)

NAMES OF UNIVERSITY	ACADEMIC YEAR							Increase 1958-64	% of Increase 1958-64
	1958	1959	1960	1961	1962	1963	1964		
Kasetsart University	6.97	12.30	12.25	10.41	14.64	19.28	21.12	14.15	203
Chulalongkorn University	27.13	33.08	25.51	23.48	33.48	44.23	56.45	29.32	108
Thammasat University	3.71	2.26	5.83	7.75	13.68	16.43	22.49	18.78	506
University of Medical Sciences	42.39	76.24	76.23	68.48	96.34	115.51	120.43	78.04	184
Silpakorn University	0.7	1.48	1.16	1.73	2.29	5.50	7.35	6.65	950
T O T A L	80.90	125.36	120.98	111.85	160.43	200.95	227.24	146.34	181

Remarks: Time existing in the budget year 1961 is 9 months.

EDUCATIONAL INVESTMENTS

TABLE 11

Expenditure per Pupil in Universities

1959 - 1963

(in Baht)

UNIVERSITY	Per Pupil Expenditure 1959	Per Pupil Expenditure 1963	Increase in Per Pupil Expenditure	% of Increase from 1959
Kasetsart	8,097	8,456	359	4.2
Chulalongkorn	5,579	7,111	1,532	27.4
Thammasart	64*	558*	494*	771.8*
Medical Science	29,099	35,152	6,053	28.8
Silpakorn	6,298	17,250	10,952	173.7
Average all (Excluding Thammasart)	11,947	15,261	3,314	27.7

* Due to student accounting procedures at Thammasart University, no valid computation of per pupil costs can be made.

EDUCATIONAL INVESTMENTS

TABLE 12

1963 Demographic Demand

(Education Attainment Constant)

LEVEL	Demand	Predicted Graduates	Difference Predicted Enrollment & Demand
University Graduates (1)	1,348	2,550	+1,202
12th Grade Graduates (2)	7,328	21,214	+13,886
7th Grade Graduates (3)	49,274	85,880	+36,606
4th Grade Graduates (3)	432,933	665,100	+232,127

(1) Prediction of Graduates by National Education Council, September, 1963.

(2) Prediction of Academic Graduates by Department of Secondary Education, September, 1963. As no predictions are available for vocational graduates at the 12-13 grade level, they are assumed to remain constant with 1962 levels of 7,148.

(3) Prediction of Graduates by Boonserm Weesakul, Department of Educational Techniques, 1963.

TABLE 13

1963 Economic Demand

(Education Attainment Constant)

LEVEL	Demand	Predicted Graduates	Difference Between Enrollment & Demand
University Graduates(1)	1,248	2,550	+1,302
12th Grade Graduates(2)	32,182	21,214	-10,960
7th Grade Graduates(3)	154,141	85,880	-68,261
4th Grade Graduates(3)	621,707	665,100	+43,393

(1) Prediction of Graduates by National Education Council, September, 1963.

(2) Prediction of Graduates by Department of Secondary Education, September, 1963.

(3) Prediction of Graduates by Boonserm Weesakul, Department of Educational Techniques, 1963.

TABLE 14

1963 Economic Demand

(Education Attainment Upgraded)

LEVEL	Demand	Predicted Graduates	Difference Between Enrollment & Demand
University Graduates(1)	1,957	2,550	+593
12th Grade Graduates(2)	39,238	21,214	-18,024
7th Grade Graduates(3)	116,345	85,800	-30,545
4th Grade Graduates(3)	877,002	665,100	-211,902

(1) Prediction of Graduates by National Education Council, September, 1963.

(2) Prediction of Graduates by Department of Secondary Education, September, 1963.

(3) Prediction of Graduates by Boonserm Weesakul, Department of Educational Techniques, 1963.

TABLE 15

1970 Demographic Demand

(Education Attainment Constant)

LEVEL	Demand	Predicted Graduates	Difference Between Enrollment & Demand
University Graduates(1)	1,370	2,950	+1,580
12th Grade Graduates(2)	7,449	39,114	+31,665
7th Grade Graduates(3)	50,088	337,040	+286,952
4th Grade Graduates(3)	440,087	816,570	+376,483

(1) Prediction of Graduates by National Education Council, September, 1963.

(2) Prediction of Academic Graduates by Department of Secondary Education, September, 1963. As no predictions of vocational graduates at the 12-13 grade level are available, they are assumed to remain at the 1962 level of 7,148.

(3) Prediction of Graduates by Boonserm Weesakul, Department of Educational Techniques, 1963.

EDUCATIONAL INVESTMENTS

TABLE 16

1970 Demographic Demand *

(Education Attainment Upgraded)

LEVEL	Demand	Predicted Graduates	Difference Between Enrollment & Demand
University Graduates(1)	20,435	2,950	-17,185
12th Grade Graduates(2)	76,269	39,114	-37,155
7th Grade Graduates(3)	250,813	337,040	+86,227
4th Grade Graduates(3)	559,887	816,570	+256,693

(1) Prediction of Graduates by National Education Council, September, 1963.

(2) Prediction of Graduates by Department of Secondary Education, September, 1963.

(3) Prediction of Graduates by Boonserm Weesakul, Department of Educational Techniques, 1963.

* Whole Kingdom to Bangkok-Thonburi levels of 1960.

EDUCATIONAL INVESTMENTS

TABLE 17

1970 Economic - Occupational Demand

(Education Attainment Constant)

LEVEL	Demand	Predicted Graduates	Difference Between Enrollment & Demand
University Graduates(1)	2,983	2,950	-33
12th Grade Graduates(2)	38,304	39,114	+810
7th Grade Graduates(3)	120,367	337,040	+217,673
4th Grade Graduates(3)	**	816,570	-

(1) Prediction of Graduates by National Education Council, September, 1963

(2) Prediction of Academic Graduates by Department of Secondary Education, September, 1963. As no prediction of vocational graduates at 12-13 are available, they are presumed to remain constant at 1962 levels of 7,148.

(3) Prediction of Graduates by Boonserm Weesakul, Department of Educational Techniques, 1963.

** No demand estimated.

EDUCATIONAL INVESTMENTS

TABLE 17-A

1970 Demographic Demand

(Education Attainment Upgraded 2% Annually)

LEVEL	Demand	Predicted Graduates	Difference Between Enrollment & Demand
University Graduates(1)	4,973	2,950	-2,023
12 Grade Graduates(2)	59,861	39,114	-20,747
7th Grade Graduates(3)	201,636	337,040	+135,404
4th Grade Graduates(3)	**	816,570	-

(1) Prediction of Graduates by National Education Council, September, 1963.

(2) Prediction of Graduates by Department of Secondary Education, September, 1963.

(3) Prediction of Graduates by Boonserm Weesakul, Department of Educational Techniques, 1963.

** No demand estimated.

TABLE 18

Additional Enrollment, Teachers, and Classrooms Needed from 1961-1970 to meet Demographic Demand (Educational Attainment of whole Kingdom upgraded to Bangkok-Thonburi Levels in 1960)

LEVELS	(1) Enrollment 1961	Enrollment Needed 1970	Increase in Enrollment Needed 1961-70	(2) Additional Teachers Needed 1970	(3) Additional Classrooms Needed 1970
Univ. 4	2,313	23,368	21,055	No Teacher-Pupil ratios are available.	No classroom-pupil ratios are available.
Univ. 3	3,007	28,046	25,039		
Univ. 2	4,209	39,257	35,048		
Univ. 1	5,778	54,959	49,181		
M.S. 5	20,778	88,183	67,405	4,490	2,320
M.S. 4	34,044	105,819	23,455	1,560	6,170
M.S. 3	73,075	169,310	96,237	4,810	2,750
M.S. 2	82,063	186,241	104,178	5,200	2,890
M.S. 1	97,988	223,489	125,501	6,270	3,300
P. 7	112,714	322,729	210,015	8,750	6,360
P. 6	126,185	341,092	214,907	8,950	7,160
P. 5	137,054	368,379	249,235	10,380	7,550
P. 4	657,313	860,903	203,950	5,080	8,480
P. 3	788,816	946,993	158,177	3,950	5,640
P. 2	947,985	1,089,041	141,056	3,520	4,550
P. 1	1,322,855	1,415,753	92,898	2,320	2,654
TOTALS	4,416,175	6,158,322	1,742,147	(4) 65,280	59,824

(1) Including vocational students at secondary level. Excluding teacher training schools at secondary and college level, and technical schools at college levels.
(2) Based on 1961 teacher-pupil ratios.
(3) Based on 1961 classroom-pupil ratios.
(4) Excluding universities.

EDUCATIONAL INVESTMENTS

TABLE 19

Additional Enrollment, Teachers, and Classrooms Needed from 1961-1970 to meet Economic - Occupational Demand

(Educational Attainment, Upgraded 2% per year)

LEVELS	(1) Enrollment 1961	Enrollment Needed 1970	Increase in Enrollment Needed 1961-70	Additional Teachers Needed 1970 (2)	(3) Additional Classrooms Needed 1970
Univ. 4	2,313	5,470	3,157	No teacher-pupil ratios are available.	No class-room pupil ratios are available
Univ. 3	3,007	6,290	3,283		
Univ. 2	4,209	8,177	3,963		
Univ. 1	5,778	10,628	4,850		
M.S. 5	20,778	65,847	45,069	2,146	1,502
M.S. 4	34,044	72,431	38,387	1,745	1,025
M.S. 3	73,073	79,674	6,601	314	174
M.S. 2	82,063	87,631	5,568	264	146
M.S. 1	97,988	96,394	-	-	-
P. 7	112,714	226,632	113,918	4,740	3,450
P. 6	126,185	249,295	123,110	5,120	4,100
P. 5	137,054	274,226	137,172	5,710	4,150
P. 4	657,313	887,000	229,687	5,720	9,570
P. 3	788,816	991,000	202,184	5,050	7,220
P. 2	947,985	1,153,000	205,015	5,120	6,610
P.1	1,322,855	1,571,000	248,145	6,200	7,080
TOTAL	4,416,175	5,784,695	1,370,109	(4) 45,165	46,591

(1) Including vocational students at secondary level. Excluding teacher training schools at secondary and college levels and technical schools at college levels.
(2) Based on 1961 teacher-pupil ratios.
(3) Based on 1961 classroom-pupil ratios.
(4) Excluding universities.

Note: Enrollments in grades 1-4 based on prediction for 1970 since no economic demand is estimated.

EDUCATIONAL INVESTMENTS

TABLE 20

Increase in Teachers and Classrooms Needed From 1962-1970 Including Estimate of Costs, to Meet 1970 Economic-Occupational Demand (Educational Attainment Constant)

Total number of new Teachers Needed to meet demand	Teacher Attrition 1962-1970	Total New Teachers Needed	Estimate (1) Increase in Budget for Salaries 1970 (Thousands)	Average Salary Increase per year 1962-1970 (recurring) (Thousands)	Additional Classrooms Needed 1962-1970	Cost of Additional Classrooms @ ₱55,000 each (Thousands)	Average Cost per year for Classrooms (1962-1970) (non-recurring) (Thousands)	Average Yearly Cost for Classrooms and teachers salaries (Teachers salaries recurring, classroom costs non-recurring) (Thousands)
42,149	46,560	88,709	709,672	78,852	45,027	2,476,485	275,165	629,425

(1) Based upon ratio of salaries to number of teachers in the Ministry of Education budget of 1961, including Vocational Department, but excluding Department of Teacher Training, and including average 3% increase per year for salary increments for all Ministry of Education personnel.

EDUCATIONAL INVESTMENTS

TABLE 21

Yearly Ministry of Education Budget Increases Per Year Needed For Salaries and Classrooms Above 1962(1) Level (Thousands Baht)

YEAR	1962	1963	1964	1965	1966	1967	1968	1969	1970
Increase Need	354,107	432,869	511,721	590,573	669,425	748,277	827,129	905,981	984,833
1962 Budget	1,468,400	1,468,400	1,468,400	1,468,400	1,468,400	1,468,400	1,468,400	1,468,400	1,468,400
Total Increased Budget Needs	1,822,517	1,901,269	1,980,121	2,058,973	2,137,825	2,216,677	2,295,529	2,374,381	2,453,233

(1) 1962 Budget was used, as 1961 was a 9-month fiscal year.

EDUCATIONAL INVESTMENTS

TABLE 22

Additional Secondary Teachers and Classrooms Needed From 1962-1970, Including Estimates of Costs, to Meet 1970 Economic-Occupational Demand for Secondary School Graduates. (1)

Additional Teachers Needed to Meet Demand (1962-1970)	Teacher Attrition 1962-1970	Total New Teachers Needed	Estimated Increase in Budget(2) for salaries (including 3% increment cost for 24 secondary Teachers) (thousands)	Average Salary Increase per year (recurring) (thousands)	Additional Classrooms Needed	Cost of Additional Classrooms at 55,000 Baht each. (thousands)	Average Cost per year for Classrooms (non-recurring) (thousands)	Average Yearly Costs for Additional Teachers and Classrooms. (thousands)
4,469	2,087	6,556	76,891	8,543	2,847	156,585	17,399	25,942

(1) Additional teachers and classrooms needed taken from Table 8.

(2) Teachers salaries computed on basis of average of ฿12,000 per year.

EDUCATIONAL INVESTMENTS

TABLE 23

Yearly Budget for Secondary Education From 1962-1970

Needed for Salaries and Classrooms Above 1962 (1) Level.

Year	1962	1963	1964	1965	1966	1967	1968	1969	1970
1962 Budget	230,940	230,940	230,940	230,940	230,940	230,940	230,940	230,940	230,940
Increase Needed	25,942	34,485	43,028	51,571	60,114	68,657	77,200	85,743	94,286
Total Budget Needs	256,882	265,425	273,968	282,511	291,054	299,597	308,140	316,683	325,226(2)

(1) 1962 Budget used as base, as 1961 was a nine-month fiscal year.

(2) Other costs are estimated to increase by approximately 101 million Baht by 1970, making a total 1970 budget of 426 million Baht, approximately double the 1962 budget for the Department of Secondary Education.

H

Characteristics of Educational Planning

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CHARACTERISTICS OF EDUCATIONAL PLANNING

Educational planning begins with the formulation of national objectives for education, objectives which indicate what a nation demands of its educational system, since it is the primary instrument in the production of trained manpower. Educational planning seeks to assist the educational system in providing this supply as efficiently and as economically as possible. This is the quantitative aspect.

Educational planning is equally concerned with the qualitative aspects of the educational system. These include the responsibility for developing attitudes and civic-cultural values, as well as academic and vocational competencies.

Some of the characteristics of educational planning are as follows:

1. It is a process for using scarce resources efficiently, rationally, and totally to reach certain national goals.

2. It is a method of looking at a series of projects to see their relationships, to determine their priorities, and to decide on the use of resources to implement them.

3. It is a tool by which waste and inefficiency can be identified and remedies proposed.

4. It is an evaluative instrument whereby projects can be appraised, problems can be resolved, and personnel can be assessed.

5. It is a facility to coordinate research and data, utilizing the scientific method in its approach to problem-solving.

6. It is a continuous activity, an on-going segment essential to any effective educational program.

In every country, the educational system is called upon to provide trained manpower to meet the immediate and future human resource requirements within an expanding economy. Manpower demands must be clarified in terms of national goals, which in turn compel the education system to determine feasible structures, programs and plans to meet these goals. This can only be done effectively through organized effort on the part of all concerned. Plans require planning; and in the effort to supply the growing and changing manpower needs of a nation, an organized educational planning body is essential. Its function is to apply systematic procedures for the purposes of;

1. Identifying alternative educational targets;

2. Supplying a basis for intelligent choices among alternatives; and

3. Making best use of the existing resources for the achievement of selected targets.

Educational planning is not an academic exercise; it is an important instrument to be used in order to develop the human resources of the country to the highest level within the educational resources available. Educational planning does not exist for itself alone. It must be a part of overall development planning, and the educational plan must be related to other sector plans associated with broad national plans.

Some of the functions of the educational planning might include:

1. Making projections about future manpower requirements by occupational classifications.

2. Converting occupational data into educational needs.

3. Establishing an inventory of educational facilities and outputs.

4. Assessing changes, both quantitatively and qualitatively, required to produce the numbers of trained persons required.

5. Making the necessary arrangements for assuring flows of students into needed areas and diverting flows from surplus areas.

6. Forecasting flows of students through the system from one level to another.

7. Studying the likely returns on alternative programs in education, assessing the per unit costs, and selecting those most desirable on the basis of educational and economic criteria.

PRINCIPLES OF EDUCATIONAL PLANNING

In the establishment of an educational planning organization, certain principles should be set forth which will provide the guidelines for such an undertaking. Some of these are as follows:

1. Educational Planning is concerned with the best use of human resources, since it pertains to economic and social development.

2. Educational planning is essential where educational goals must be set and policies established which are consonant with the overall national goals and manpower needs.

3. Educational planning seeks to facilitate the implementation of policies to achieve educational goals, and in turn helps to develop new goals.

4. There should be one agency with overall authority to determine educational policies and to set educational goals.

5. Where there are insufficient funds to meet all requirements for trained manpower, priorities must be established and short and long-range plans must be made to provide as efficient and economical an educational program as is possible. Organized planning is essential to achieving this greater efficiency and economy of educational operations.

6. Educational planning is a high-level staff function, providing professional guidance to the authorities in the determining of educational goals, the making of educational policies, and their execution.

7. Educational planning involves not only the primary educational institutions but the related economic and financial agencies of the nation.

8. Educational planning is a continuous process, through which the changing manpower needs are promptly and effectively met by the institution(s) charged with supplying the trained manpower.

EDUCATIONAL PLANNING FOR THAILAND

The educational goals for Thailand have been only generally stated, as in the New Scheme of Education for 1960. Specifics appear to be left largely to the Ministry of Education itself or to the individual universities. The "Six-Year Plan of Education" (produced in 1960) appears to be mainly a series of projects, geared largely to physical plant expansions, and making slight impact on overall educational plans.

There are two major professional bodies which are primarily concerned with educational planning: (1) the National Education Council (NEC) established three years ago under the Prime Minister's office, which is charged with educational policy-making at all levels, and which has direct responsibility for the administration of the universities; and (2) the Ministry of Education (MOE) which administers all lower levels of formal education (including teacher training institutions) and exercises some control over private schools (largely secondary).

Along with these two bodies are related governmental agencies which have either a direct or indirect effect upon the educational program. The most direct is the Bureau of the Budget which exercises control over the budget submitted by the Ministry and approves all major expenditures previously budgeted. A second agency which will indirectly influence education is the National Economic Development Board (NEDB), under which the manpower requirements are to be determined, and whose findings should direct the efforts of education toward meeting the trained manpower needs. Any efforts to establish a sound professional planning program will have to take into account the elements described above, and will require close and constant coordination.

A comprehensive, detailed statement of educational goals, based upon the findings of manpower needs, should be prepared at the earliest possible moment. These are essential to give more specific direction to the educational planning and the targets toward which efforts should be directed in human resource development. This is the legal responsibility of the NEC.

Educational Planning Office (EPO) for Thailand

An education planning office , located in the Ministry of Education (MOE), should be established at a high-level, ministry-wide, having relationships to all sections in the MOE, on a staff (advisory) basis. Such an organization would be the channel through which all educational planning, both academic and organizational, should flow. One of its major continuing and coordinating functions will be to utilize fully the capacities of MOE and allied institutions for applied research activities and adequate statistical data acquisition which form the basis for sound educational planning. From these would come the plans and subsequent plan modifications to enable the MOE to provide the trained manpower required by this rapidly developing nation.

Membership on this planning body should include competent researchers, statisticians, educational economists, social scientists, etc. The efforts of this staff working with all elements within the MOE would be closely geared to overall national economic planning, which is charged with assessing human resource needs as they relate to economic development. Because of expanding enrollments and increasing costs, the EPO should place a heavy emphasis on the economics of education as an important determinant of the priorities which must be established in meeting manpower demands for both the present and immediate future.

Based upon the principles, set forth above, as applied to the existing conditions in Thailand just described, the following steps should be taken toward achieving effective educational planning in this country: (1) There would be established a major Educational Planning Office (EPO) in the MOE to implement the established policies, consonant with the human resource needs of the nation as determined by the parallel Manpower Planning Unit in NEDB. (2) This MOE office being established at a high level (above the Departments), should have either the Minister of Education or the Under-Secretary of State for Education as Chairman. (3) The active head of EPO should be its vice-chairman, who carries the rank of deputy Under-Secretary of State for Education. With its direct connection with the Under-Secretary, the implementation of EPO's findings could be accomplished through this top administrator's office. (4) This office would provide and/or coordinate all research and statistics essential to the various levels of educational planning, closely relating its activities to the overall economic planning elements in the nation. (5) This unit would maintain close liaison with the manpower planning unit of the national government (NEDB), as well as with the pertinent financial agencies (such as Bureau of the Budget, Ministry of Finance).

The effectiveness of the EPO will lie in: (1) The high-level of placement in the organization, (2) the high position of the Chairman and Vice-Chairman, (3) the size, competency and financial support of the staff and facilities, (4) the recognition and support by representative segments of each agency of the importance of unified planning, and (5) the extent of coordinated activity with related planning bodies.

COORDINATION WITH OTHER OFFICES CONCERNED WITH PLANNING

As indicated earlier, there are certain other governmental agencies with which the EPO must be closely coordinated, including the following:

NEDB, Manpower Planning Office

This organization's task is to keep fully informed on current and future national manpower needs in both the private and public sectors. Close coordination with this office would be two-fold: (a) through the Deputy Secretary-General who heads the NEDB Manpower Planning Office and the Deputy Under-Secretary in EPO; and (b) a key member of the NEDB office who would participate in the pertinent studies related to the demand for and supplying of trained manpower. A member of EPO should have a similar responsibility at the NEDB office.

NEC

This organization has a dual (and possibly conflicting) responsibility of (a) establishing educational goals and developing educational policies to the goal's achievement; and (b) generally administering the five universities of Thailand. EPO should keep in close touch with the policy-making element in the NEC, making its service available to NEC in order to provide sound, professional bases for establishment or modification of important policies. It should also maintain a close liaison with the administrative element in NEC which is responsible for the overall direction of the universities. Both these relationships could be coordinated through a Deputy Secretary-General for NEC, and through selected personnel from this body and/or universities.

It has been suggested that each university have a Planning Officer (or office) under its Secretary-General, who would be concerned with the planning within the institution. These persons, under the leadership of the Deputy Secretary-General of NEC, would be the group coordinating with the EPO on matters of common interest.

Bureau of the Budget

The EPO should have a continued and close liaison with a duly assigned representative of this important Bureau. In any planning, the support of the Bureau is essential since it has the power to approve or deny funds. EPO should have the continual advice of this representative on budget matters, and in turn should provide the information and understanding to the Bureau which may be necessary to obtain its support.

Other contacts might include representatives from the Civil Service Commission, Social Welfare, Public Health, Agriculture, Defense, etc., as planning problems arise.

In addition, pertinent research and statistical activities of the various universities and colleges, private institutions, companies and foundations, should be utilized wherever possible. The National Research Council, in particular, might prove to be a most fertile source of cooperative activity.

EPO Organization and Procedures

1. The purpose in establishing this office is to assist the educational system in providing trained manpower for Thailand as efficiently and economically as possible. It is established on the principles set forth in Part II above.

2. The organization, within the Office of the Under-Secretary of State for Education, will include:

(a) Administrators: a Chairman, Vice-Chairman, and a group of full-time assistants.

(b) Senior Staff: Educational Specialists--full-time researcher, statistician, economist, social scientist, and others as deemed necessary.

(1) If not now available in the MOE, the best possible specialists should be recruited from outside.

(c) Junior Staff: to support the specialists, especially in research and statistics - plus secretarial.

(1) A portion on full-time.

(2) Additions, as needed for specific programs or projects.

(d) Assigned Representatives from other related agencies - regularly participating in all pertinent projects, e.g. Bureau of the Budget, NEDB and NEC.

(e) Consultants may be requested for specific projects, and for long or short periods of time.

3. EPO procedures

(a) A project necessitating planning is referred to the Office for the consideration of the Chairman, et al, to determine if and how the office would handle the problem.

(b) If accepted, staff would make the study, and recommend procedures.

(c) In the process any or all sectors of the MOE may be called upon to participate and assist. EPO will have the responsibility of coordinating results and recommending solutions.

(d) The findings and recommendations are to be submitted to the Under-Secretary of State for Education for implementation as needed.

(e) This might require consideration by the Director-Generals and/or other individuals or units concerned, prior to implementation; or by:

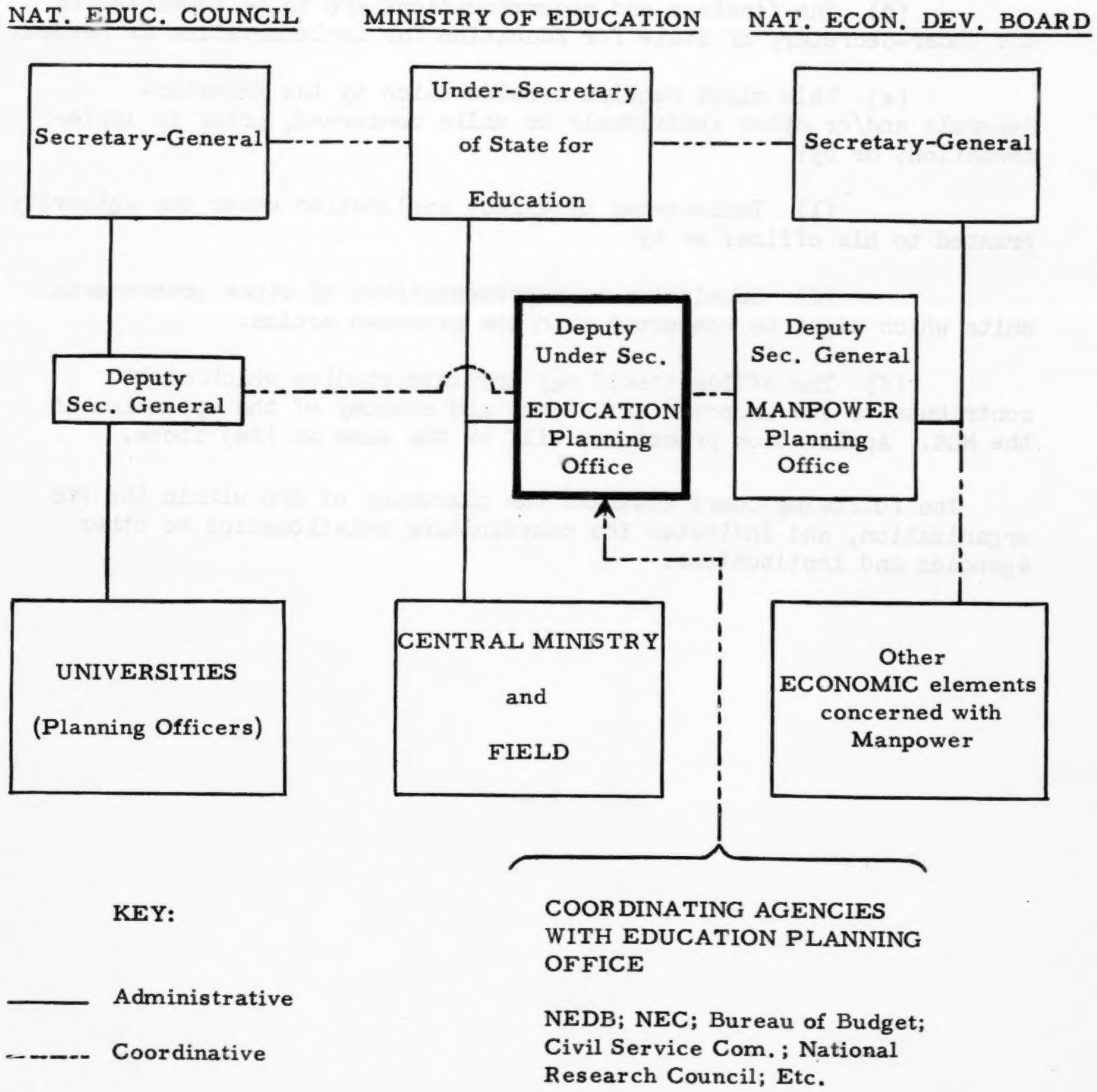
(1) Implemented by direct application under the authority granted to his office; or by

(2) Submission to representatives of other governmental units which might be concerned with the proposed action.

(f) The office itself may initiate studies which might contribute to the improved efficiency and economy of the operation of the MOE. Application procedures will be the same as (3e) above.

The following Chart diagrams the placement of EPO within the MOE organization, and indicates its coordinating relationships to other agencies and institutions.

EDUCATIONAL PLANNING - CHART 1. Model for Educational Planning Organization


NAT. EDUC. COUNCIL
MINISTRY OF EDUCATION
NAT. ECON. DEV. BOARD
Secretary-General
Under-Secretary of State for Education
Secretary-General
Deputy Sec. General
Deputy Under Sec. EDUCATION Planning Office
Deputy Sec. General MANPOWER Planning Office
UNIVERSITIES (Planning Officers)
CENTRAL MINISTRY and FIELD
Other ECONOMIC elements concerned with Manpower
KEY:
Administrative
Coordinative
COORDINATING AGENCIES WITH EDUCATION PLANNING OFFICE
NEDB; NEC; Bureau of Budget; Civil Service Com.; National Research Council; Etc.